DOCUMENT RESUME

ED 202 489 IR 009 368

AUTHOR Epstein, Hank; Epstein, Susan Baerg
TITLE The Effective Use of Automation in Wisconsin Libraries, 1981-1985.
INSTITUTION Information Transform Industries, Costa Mesa, Calif.
SPONS AGENCY Wisconsin State Dept. of Public Instruction, Madison. Div. of Library Services.
REPORT NO WSDPI-Bull-1204
PUB DATE Oct 80
NOTE 136p.

EDRS PRICE MF01/PC06 Plus Postage.
DESCRIPTORS Cataloging; Databases; *Library Automation; Library Circulation; *Library Planning; Library Services; *Library Technical Processes; *Online Systems; *Statewide Planning
IDENTIFIERS *Wisconsin

ABSTRACT

Intended to provide recommendations which will permit Wisconsin libraries to make more effective use of current automated systems, select the most appropriate new systems, and provide a basis for statewide library automation planning, this report describes the current and future use of automation technology in that state's libraries. Its four major sections discuss the following: (1) highlights of the report and the report audience; (2) the existing automation environment in Wisconsin, online catalogs, and a statewide database; (3) current major commercial and not-for-profit automated services and planned extensions to these services, including circulation systems, cataloging systems, acquisition systems, serials systems, and search services; and (4) a 5-year plan defining the specific actions, projects, committees, and task teams needed to carry out the report recommendations. (FM)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED202489

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

THE EFFECTIVE USE OF AUTOMATION

IN WISCONSIN LIBRARIES

1981 - 1985

by
Hank Epstein
Susan Baerg Epstein

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

W. Erpenbach

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

October, 1980
Information Transform Industries
Costa Mesa, California

Bulletin No. 1204

IR009368

CONTENTS

PART I. INTRODUCTION AND EXECUTIVE SUMMARY

Chapter		page
1.	INTRODUCTION	2
	OVERVIEW	2
	Purpose of the Report	2
	Outline of the Report	3
	THE REPORT AUDIENCES AND READING PRIORITIES	4
	Library and Administrative Board Members and Trustees	4
	Impact of the Recommendations	5
	Library Administrators	5
	Senior Library Staff Involved with Automation	6
2.	EXECUTIVE SUMMARY	7
	CURRENT AUTOMATION IN WISCONSIN LIBRARIES	8
	MAJOR ISSUES AND LIMITATIONS OF CURRENT SYSTEMS	8
	On-Line Cataloging	9
	On-Line Finding Tool for ILL	9
	Need for a Statewide Finding Tool	9
	ON-LINE CATALOGS AND COM CATALOGS	10
	COM Catalogs	10
	THE STATEWIDE DATA BASE	11
	Generating the Initial Data Base	12
	Summary of Costs for Statewide Data Base and COM Catalog	13
	CIRCULATION SYSTEMS	13
	BATCH UNION LIST OF SERIALS	14
	FUNDING FOR AUTOMATION	15
	AUTOMATION CONSULTANTS	16
	WISCONSIN STATEWIDE AUTOMATION COORDINATING COMMITTEE (WSACC) AND TASK FORCES	16
	THE FIVE YEAR PLAN	17
	THE EMERGING FUTURE OF AUTOMATION TECHNOLOGY	17
	THE LIBRARY RESPONSIBILITY	18

PART II. CURRENT SYSTEMS AND THE NEED FOR A STATEWIDE DATA BASE

3. BACKGROUND 20

CURRENT AUTOMATION IN WISCONSIN LIBRARIES 20
On-Line Cataloging Systems 20
Distribution by Type of Library 20
Geographical Distribution 21
Major Contributors to the Wisconsin Data Base 21
Interlibrary Loan (ILL) using OCLC Cataloging Files . . 21
Limitations to Resource Sharing Through OCLC 22
Circulation Systems 24
On-Line Circulation Systems 24
Current Planning Activities 25
Acquisitions, Serials, and Bibliographic Search Services . 25
Acquisitions Systems 26
Serials Systems - (Serials Lists and Union Lists Of Serials) 26
A/V Lists and Union List Of Audio/Visual Materials . . 27
Bibliographic Search Services 27
Wisconsin Dissemination Project - WDP 28
Other Machine Readable Files 28
Other Automation 29
SHARED RESOURCES: ACCESS TO BIBLIOGRAPHIC DATA 29
Location of Material 29
Assumed Locations 30
Effective Location Tools 30
THE WISCONSIN STATEWIDE DATA BASE 31
AVAILABILITY OF WISCONSIN MACHINE READABLE RECORDS 32
COOPERATION 33
STANDARDS 34

4. ON-LINE CATALOGS 36

GENERAL REQUIREMENTS OF AN ON-LINE CATALOG 37
POTENTIAL SOURCES FOR ON-LINE CATALOG SYSTEMS 39
OCLC On-Line Catalog 39
Local Development of a Wisconsin Statewide On-Line Catalog 40
Commercial Turnkey On-Line Catalogs 40
Cataloging Vendors 40
Circulation Vendors 41
DBMS Vendors 42
SCENARIOS FOR ON-LINE CATALOG IMPLEMENTATION 42
System Capacity - A Note of Caution 44
SCHEDULES FOR ON-LINE CATALOGS 45
Conclusion 45

THE NEED FOR A DATA BASE 46
THE COM CATALOG: AN INTERIM FINDING TOOL 46
Forms of COM Catalogs 47
Choices of Forms and Cumulation Levels 47
Backup to the On-line Catalog 48

5. DATA BASE 49

AVAILABLE MACHINE READABLE RECORDS 49
COM CATALOG 50
BUILDING THE DATA BASE 51
OCLC Catalog Records 51
Milwaukee Public Library Circulation Records 51
UW - Madison Reserve Room Circulation Records 51
CLSI Circulation Files 52
Upgrading of Existing Records to MARC Format 52
Upgrade Costs 52
Milwaukee Public Library Conversion 53
PHASE I DATA BASE 54
ADDITIONS TO THE MACHINE READABLE FILES 54
Updating 54
Acquisition Tapes 54
Other Methods 55
RETROSPECTIVE CONVERSION 55
OCLC Retrospective Conversion 56
OCR and Related Technology 56
Book Jobbers 56
Manual Matching 57
ADDITIONAL USES FOR THE DATA BASE 57
Conversion to a COM Catalog 58

PART III. CURRENT PLANS AND FUTURE SYSTEMS

6. CIRCULATION SYSTEMS 60

CURRENT PLANS 60
SELECTION CONSIDERATIONS 60
Missing Features or Services 61
Inadequate Capacity 61
THE SELECTION PROCESS 62
Transaction Volume 62
Locations 63
Average Hourly Load 63
Peak Load 63
Write the RFP 64

Transaction Mix 64
Response Time 65
Interfaces with Other Systems 66
Evaluate the Proposals 67
Additional Considerations 67
Benchmark Test 68
Acceptance Test - Contract Provision 70
Contracts With The Vendor 70
Acceptance Test 71
RECOMMENDATIONS FOR CIRCULATION SYSTEMS 72
Existing Systems - CLSI 72
On-Line Interface to Cataloging Systems 72
On-Line Interlibrary Loan 73
Circulation to Catalog File Conversion 73
UW - MADISON CIRCULATION SYSTEM 73
Current Research and Development Activity 74
MILWAUKEE PUBLIC LIBRARY CIRCULATION SYSTEM 74
Bibliographic Files 74
Upgrade Of Milwaukee Public Library Records 74
POSSIBLE LOCAL DEVELOPMENT OF AN AUTOMATED CIRCULATION SYSTEM 75

7. BIBLIOGRAPHIC UTILITIES, BROKERS, VENDORS, AND CONSORTIA 76

OCLC 76
Current Status 76
Recommendations for Statewide Use of OCLC 76
Retrospective Conversion on OCLC 78
Floater Terminals for Conversion 79
RLG/RLIN 79
Current Status 79
Access to RLG/RLIN Records 80
Recommendations for Limited Use of RLG/RLIN Search Services 80
WLN 81
Current Status 81
Replication of the WLN System 82
Recommendations for Potential Use of WLN System 82
WLC 83
Current Status 83
The Replication Decision 83
Recommendations for WLC Services 83
VENDORS OF ON-LINE CATALOGING SYSTEMS 84
MINIMARC 84
Circulation System Vendors 85

8. ACQUISITION SYSTEMS 86

THE CATALOGING UTILITIES 86
WLN 86
RLG/RLIN 86
OCLC 86
THE CIRCULATION VENDORS 87
BOOK JOBBERS 88
On-line Book Order Systems 88
Package Bids 89
Additional Systems and Services 89
Book Ordering Interface with Circulation Systems 89
RECOMMENDATIONS FOR USE OF ACQUISITION AND BOOK ORDERING SYSTEMS 90

9. SERIALS SYSTEMS AND SEARCH SERVICES 92

SERIALS SYSTEMS 92
Serials Cataloging 92
Serials Check-in 92
Union List of Serials (Batch) 93
UW - Madison ULS 93
Wisconsin ULS - MINITEX System 93
Wisconsin ULS - On-Line OCLC System 93
Incompatible Files 94
Recommendation - Selection of a Statewide ULS System . 94
SEARCH SERVICES 96
Recommendations 97

10. ADDITIONAL RECOMMENDATIONS 100

DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES 100
SYSTEMS 104
ALL LIBRARIES 104

PART IV. 1981-1985: A FIVE YEAR PLAN

11. INTRODUCTION TO THE PLAN 106

THE SYSTEM DEVELOPMENT PROCESS 106
A NOTE ABOUT SCHEDULES 108

12. TASKS FOR 1980/81 109

AUTOMATION COORDINATING COMMITTEE 109
DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES 111
UW SYSTEM 113
PUBLIC LIBRARIES AND SYSTEMS 114
WILS/WLC 115
SCHOOLS, SCHOOL DISTRICTS, AND CESAS 115
ACADEMIC LIBRARIES 116

13. TASKS FOR 1981/82 117

AUTOMATION COORDINATING COMMITTEE 117
DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES 117
UW SYSTEM 118
PUBLIC LIBRARIES AND SYSTEMS 119
SCHOOLS, SCHOOL DISTRICTS, AND CESAS 120
ACADEMIC LIBRARIES 120

14. TASKS FOR 1982/83 121

AUTOMATION COORDINATING COMMITTEE 121
DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES 122
UW SYSTEM 122
PUBLIC LIBRARIES AND SYSTEMS 123
SCHOOLS, SCHOOL DISTRICTS, AND CESAS 123
ACADEMIC LIBRARIES 123

15. TASKS FOR 1983/84 AND 1984/85 124

THE EMERGING FUTURE OF AUTOMATION TECHNOLOGY 125
THE LIBRARY RESPONSIBILITY 125

PART I

INTRODUCTION AND EXECUTIVE SUMMARY

Chapter 1

INTRODUCTION

1.1 OVERVIEW

1.1.1 Purpose of the Report

This report describes the current and future use of automation technology in Wisconsin libraries. The cost of operating libraries is increasing with inflation and the cumulative inefficiencies of certain manual systems. Automation in libraries is the major currently available operations and management tool that has the potential benefit of slowing down these increasing costs; in some cases the actual costs of certain operations may be reduced as a result of automation. Another major advantage of automation is the potential for dramatic improvement in library services for the library patron and library staff; improvements in library services through resource sharing can be achieved on a local, area, statewide, and national level as a direct result of automation.

With shrinking library budgets and high levels of inflation, libraries of all types must not only adopt, but share the use of technology in order to serve their patrons. Without technology, increasing personnel and material costs may force the curtailment of some current services and prevent the introduction of new services to respond to a rapidly changing world. The investment of funds now will moderate the growth of operating expenses in the future. The purpose of this report is to provide recommendations which will permit Wisconsin libraries to make more effective use of current automated systems, select the most appropriate new systems, and provide a basis for effective statewide planning which will take advantage of current and future automation technology.

1.1.2 Outline of the Report

The chapters in this report are presented in four major parts. Part I consists of the Introduction and Executive Summary. The Introduction (Chapter 1) contains an overview of the report, a description of the report audiences, and suggests reading priorities for the different report audiences. The Executive Summary (Chapter 2) is a non-technical summary of the major issues and recommendations of the report.

Part II, Current Systems and the Need for a Statewide Data Base, describes the existing automation environment in Wisconsin and defines the key components for future statewide automation activities. The Background (Chapter 3) describes current automation in Wisconsin libraries and the value and uses of a statewide data base. On-Line Catalogs (Chapter 4) defines an on-line catalog, its uses, potential sources and schedules, the future of the on-line catalog, and methods to prepare for this service. The Data Base (Chapter 5) describes methods of building the initial and future versions of the statewide data base, the potential sources of data, and detailed uses of the data base.

Part III, Current Plans and Future Systems, describes the current major commercial and not-for-profit automated services and planned extensions to these services; most of the development now in process will be completed in the 1980 - 1985 period. Recommendations on the selection and use of these automated services are included in each chapter. Circulation Systems (Chapter 6) describes a multi-vendor environment and a detailed outline for the selection and acquisition of turnkey systems. Bibliographic Utilities, Brokers, Vendors, and Consortia (Chapter 7) describes cataloging systems and the possibility of future area, statewide, and multi-state services. Acquisition Services (Chapter 8) describes potential sources for future acquisition systems and currently available book ordering systems. Serials Systems and Search Services (Chapter 9) describes the availability of serials cataloging and check-in systems, recommendations for generation of a statewide union list of serials, and the cooperative use of commercial services. Additional Recommendations (Chapter 10) contains recommendations not covered by the previous chapters, which are grouped by type of library.

Part IV, 1981 - 1985: A Five Year Plan, defines the specific actions, projects, committees, task teams, etc. required to carry out the report recommendations. Introduction to the Plan (Chapter 11) defines a methodology for project definition and control and some general comments about schedules. Tasks for 1980/81 (Chapter 12) describes the formation of a Wisconsin Statewide Automation Coordinating Committee (WSACC) and

several of its task forces, and specific projects for the Department of Public Instruction/Division for Library Services (DPI/DLS), University of Wisconsin (UW) and other academic libraries, public libraries and public library area systems (systems), school and school district libraries, Wisconsin Library Consortium (WLC), Wisconsin Interlibrary Loan Service (WILS), and other agencies. Tasks for 1981/82 (Chapter 13), Tasks for 1982/83 (Chapter 14), and Tasks for 1983/84 and 1984/85 (Chapter 15) follow the same general pattern.

In some cases material is repeated in different chapters in a different context. This is done for readers who will not examine the entire report, and to avoid a constant referring from one section to another while reading.

The use of the term "computer" in this report refers to computer hardware, including the main computer, disk files, telecommunications equipment, and terminals. The term "technology" (implying "information technology") as used in this report refers to the application of hardware (computers, COM, and microform devices) and methods which are used as tools to aid in the handling of information. The term "automation" as used in this report refers to the uses of information systems which have been developed (using these technological tools) to automatically receive, process, store, or retrieve information used by libraries. Automation is a combination of computers, software, machine readable files, COM and microform devices, and the users and uses of information systems in libraries.

1.2 THE REPORT AUDIENCES AND READING PRIORITIES

This report is directed at three different audiences: library and administrative board members and trustees, library administrators, and senior staff involved with automation.

1.2.1 Library and Administrative Board Members and Trustees

The Executive Summary (Chapter 2) is directed towards board members and trustees who establish policies for school, public, and academic libraries; the summary contains a non-technical review of the entire report, highlighting the major issues and recommendations and their associated costs. Board members and trustees should briefly scan Part II (Chapters 3-5) for a review of current automation in Wisconsin and

the use of a statewide data base, and Part III (Chapters 6-10) for a review of current and future systems; a careful review should be given to the "Recommendation" portions of these chapters. Board members and trustees should pay particular attention to that portion of Part IV, 1981 - 1985: The Five Year Plan (Chapters 11-15) that is directed towards their organization; a brief review of the projects of other organizations may place their own organization's tasks, projects, schedules, and budgets in perspective.

1.2.1.1 Impact of the Recommendations

The implementation of these recommendations requires a considerable amount of staff work on the part of the libraries; the implementation expenses of labor, capital, and vendor costs range from a few thousand dollars to several hundred thousand dollars. The allocation of these dollars on certain statewide projects will produce automated resources which will dramatically reduce the cost of future activities in individual libraries by many orders of magnitude. The earlier these projects are completed, the greater the return. The early availability of budgetary support for the high return projects is a major issue.

1.2.2 Library Administrators

Library administrators should review the entire report in detail. Portions dealing with types of automation they are familiar with should be relatively clear; the recommendations can then be evaluated in the context of their own libraries' current activities. Chapters or sections describing other forms of automation not currently available in the administrators' libraries should provide useful background for selecting priorities, initial planning for some selected projects in these new areas, and participating in committees and task forces.

Administrators should review the Executive Summary and portions of the Five Year Plan that deal with their type of library for potential impact on their libraries; libraries planning to acquire a circulation system, as a single library or as part of a consortium, should carefully review the sections on Selection Considerations (6.2) and the Selection Process (6.3) in the Circulation chapter. Planning for a future on-line catalog (Chapter 4) and early participation in the statewide data base (Chapters 3 and 5) are also high priority items for administrators.

1.2.3 Senior Library Staff Involved with Automation

The library staff should review the entire report to appreciate the dimensions and magnitude of statewide and individual library activities. Special attention should be given to the particular areas of automation in which the staff is, or soon will be, involved; interfaces between automated systems should also be reviewed to determine the potential benefits and costs. All staff should determine the contributions to, the potential uses of, and the benefits of the statewide data base for their libraries.

Particular attention should be given to the detailed recommendations and examples that apply to their areas of automation. The senior staff will most likely be responsible for defining, designing, implementing, and operating the projects defined in the report as key members of the project task forces.

Chapter 2

EXECUTIVE SUMMARY

This chapter contains a summary of the report, a description of the critical issues, and seven major recommendations. The Executive Summary generally follows the same sequence as the remainder of the report. For additional information on any of these subjects, refer to the report section numbers in parentheses (e.g., 3.2) listed at the end of each discussion.

In many cases the approximate cost and recommended responsible agency are presented. The costs are meant only to convey the magnitude of the effort and may be used for preliminary budgetary and planning purposes; the estimates will tend to become more accurate as more planning is done by the various committees. The schedules for these recommendations are presented in Part IV 1981 - 1985: A Five Year Plan.

In any case, priorities among these activities need to be established (possibly by a Wisconsin Statewide Automation Coordinating Committee - WSACC - see 12.1) in order to make the best allocation of resources, given an available budget. There is a very real need for the libraries to obtain substantial additional funds for automation. Without this investment of funds the cost of providing even traditional library services will continue to rise with inflation.

By automating some functions successfully in Wisconsin libraries, the rate of rise in costs can be held substantially lower than the inflation rate, often in the presence of additional workload (more patrons, more circulation, etc.). Automation also provides new services at a small fraction of the cost of providing the new services manually; for example, once a statewide data base has been established, the cost of supplying 350 libraries with a copy of a one million title union catalog on microfiche is only $330 per library ($115,000 total). The cost of providing a manual union catalog of one million titles would be many times that cost.

2.1 CURRENT AUTOMATION IN WISCONSIN LIBRARIES

There is a great deal of automation currently in use in Wisconsin libraries.

1. Fifty-four public, academic, and special libraries catalog more than 600,000 titles per year (one title every twelve seconds) and receive over 3.5 million computer-produced catalog cards from OCLC, a nationwide on-line cataloging network. (3.1.1)

2. Automated interlibrary loan (ILL) using the OCLC system was implemented during 1979, and Wisconsin libraries are beginning to use the system; after one year of use, from July 1, 1979 to June 30, 1980, the Wisconsin OCLC/ILL usage was 12,000 transactions. The OCLC files contain information on over 6 million titles and 50 million copies of library material from over 2,000 libraries throughout the U.S. (3.1.1.4)

3. One public and three academic libraries utilize automated on-line circulation systems and circulate over 4,990,000 books and other library materials per year (one book every 2 seconds). Every second throughout the year a Wisconsin patron is either checking out a book or returning a book through an automated circulation system. (3.1.2)

4. Several libraries and groups of libraries have developed computer files which are used to generate separate lists or union lists of library materials. Five separate union lists of serials have been generated representing more than 259,000 serial titles; there are also five lists or union lists of audio-visual materials representing over 100,000 titles. (3.1.3.2)

5. On-line searching of commercial and governmental bibliographic data bases is done by the Wisconsin Dissemination Project, UW - Madison Engineering Library. and other academic and special libraries. (3.1.3.4) (3.1.3.5)

2.2 MAJOR ISSUES AND LIMITATIONS OF CURRENT SYSTEMS

Wisconsin libraries obtain many benefits from their extensive use of automation; however, much of this same automation also has some very serious limitations and raises certain issues when viewed from a statewide perspective.

2.2.1 On-Line Cataloging

While the 54 OCLC libraries are, indeed, receiving good value from the OCLC system, it should be noted that only the 54 OCLC member libraries can take advantage of the 6 million titles in the OCLC files and use these records for cataloging purposes; since the other Wisconsin libraries do not participate in OCLC, they are not eligible to search the OCLC bibliographic files for cataloging information. (3.1.1.5)

2.2.2 On-Line Finding Tool for ILL

In the same way, only these same 54 OCLC member libraries can search the OCLC file to locate the 50 million copies of library material needed for ILL; other libraries, not members of OCLC, are not able to search OCLC directly for this information. While the OCLC member libraries can locate material in all 50 states, the non-OCLC libraries have no current automated method of locating even Wisconsin materials, unless searching is done for them by an OCLC member, such as a public library system, the Wisconsin Interlibrary Loan Service (WILS), or the Wisconsin Bureau of Reference and Loan. Such second-party searching adds time delays to the process of locating materials. (3.1.1.5)

2.2.3 Need for a Statewide Finding Tool

The 1,800,000 titles cataloged through August 1980 on OCLC represent a very small fraction (1-10%) of the collection of most of the Wisconsin OCLC libraries; the rest of the titles for these libraries, representing the majority of their collections, and all of the titles for most of the non-OCLC libraries, are not known to other libraries throughout the state. Of the approximately 350 public libraries in Wisconsin, about 250 have budgets of less than $10,000 per year (including salaries and books); these 250 libraries serve communities of less than 2000 people. Of the 433 school districts in Wisconsin, 75% have enrollments of 2000 students or less and have small media centers. The patrons of these small public and school libraries have a need for some of the library material held in other Wisconsin libraries.

> MAJOR REQUIREMENT: It is vital for every Wisconsin library to be aware of the holdings of other Wisconsin libraries in order to quickly locate and borrow material needed by a library patron that is not available at the patron's library. It is this

sharing of library resources among libraries that makes libraries much more cost effective.

It is not necessary, or even desirable, for a library to acquire and store all of the available material on all of the subjects and disciplines covered by the library. (3.2)

> MAJOR REQUIREMENT: There is a high priority need for a finding tool of all library materials in Wisconsin; the finding tool should be available to all libraries in Wisconsin at a reasonable cost. A major portion of this report responds to this issue.

Once this finding tool is available to patrons and library staff, the demand for material from other Wisconsin libraries will increase, especially within the same geographic area, making more effective use of library materials in Wisconsin.

2.3 ON-LINE CATALOGS AND COM CATALOGS

The ultimate finding tool to meet the needs described above would be an on-line catalog with files containing bibliographic and holdings information from Wisconsin libraries, with terminals in each library to access this file. The general requirements, potential sources, implementation scenarios, and schedules for an on-line catalog are described in Chapter 4; however, the conclusion states that on-line catalogs will not be available for several more years, and therefore the best policy to pursue at this time is to plan and prepare for the eventual use of an on-line catalog and make effective use of interim products. (4.4)

2.3.1 COM Catalogs

One of the most effective interim products which could provide most of the benefits of a statewide finding tool is a COM (Computer Output Microfilm) catalog, in either roll microfilm or microfiche form. A COM device actually reads a computer magnetic tape and generates a film (roll or fiche) master (much as a computer and printer might read a tape and print a report or catalog cards); the film master is reproduced as many times as required for distribution to libraries.

A COM catalog is quite inexpensive compared to an on-line system. An on-line system has the costs of a central computer and files, terminals in each library, and transmission lines to each library. Copies of a one million title statewide COM catalog might cost in the range of $250 to $300 per copy ($257 average) plus a microfiche reader for $200. The cost of generating the statewide data base (see Section 2.4.) will add about $70 to this cost ($328 total). Larger libraries with high usage may wish to obtain mechanized microfilm readers for $800 to $1000 in order to achieve faster access. (4.6)

1. COST ESTIMATE: $115,000 (350 copies) - 1 million title catalog (includes $25,000 for statewide data base)

2. COST ESTIMATE: $230,000 (350 copies) - 2 million title catalog (includes $50,000 for statewide data base)

COM catalogs would only need to be updated 1-2 times per year due to the cost of the new edition (an additional $90,000 - $180,000); changes occuring between catalog issues would not be available until the next issue of the COM catalog. The statewide COM catalog would be used as a finding tool for interlibrary loan (ILL) and would not replace a library's card catalog, although an individual library could choose to use the statewide data base to produce its local COM catalog on a more frequent basis and use this COM catalog to replace its card catalog. The nature of ILL request patterns permits an annual or semi-annual edition; the needs of an individual library, for access information to their own collection require more frequent updating. A finding list for serials is described in Section 2.6.

2.4 THE STATEWIDE DATA BASE

In order to generate a file for an on-line catalog or a COM catalog the information must be available in machine readable form. Converting records to machine readable form is one of the most expensive operations in any automated system. If information has not been converted it must be keyed in (typed in on a terminal or other input device). As an example, for a circulation system with 150,000 titles in the collection, 150,000 brief titles and detailed holdings information (location, copy, and call number) would be required to be input; a task that would take 5,000 hours or 2 1/2 operator years. If, on the other hand, most of the needed title records existed in machine readable form and were available for extracting and copying into the circulation file, approximately half

of the input task (1 1/4 operator years) could be eliminated; this savings could be repeated at each library performing a similar task.

A single, combined, statewide data base (machine readable file) could be generated from data obtained on magnetic tapes from a variety of existing Wisconsin cataloging records, including OCLC, circulation records, and other sources. Data extracted from the statewide data base could, in turn, then be used to generate copies of the entire file (or a portion of the file) for statewide, area, or individual library catalogs (both on-line or COM catalogs), area or individual library circulation files, and a variety of other uses. This statewide data base is, then, the key to cooperative automation activities in Wisconsin libraries, and is essential to the effective sharing of Wisconsin library resources. (5.0)

> MAJOR RECOMMENDATION 1: Libraries in Wisconsin should establish a machine readable Wisconsin Statewide Data Base (WSDB) at the earliest possible time, and utilize this data base for generating a variety of statewide, area, and individual library products.
>
> COST ESTIMATE: $25,000 (for a one million title data base), or $50,000 (for a two million title data base, including all known Wisconsin holdings in machine readable form) to establish the original data base. Costs for products generated from the data base are included with the discussion of the product, such as a COM catalog (Section 2.3.1).

2.4.1 Generating the Initial Data Base

The first version of the statewide data base should be generated by combining existing machine readable records such as OCLC tapes, circulation file tapes, and other machine readable tapes from Wisconsin library systems. Before the records can be combined or merged the records must be upgraded to the national bibliographic standard (called MARC II Standard Communications format); fortunately, commercial vendors maintain records in the MARC format and have the ability to take a brief user record, match the brief record with the MARC record, and combine the full bibliographic portion of the MARC record with the holdings portion of the user record, creating an upgraded record which conforms to national standards. In this way it is possible to combine full cataloging records from OCLC and brief records from circulation files into a statewide data base of uniform high quality.

The resulting area or statewide catalog would be the highest quality possible rather than being degraded by incomplete or incorrect records. Libraries extracting data for circulation files would also derive the benefits of the improved records. (5.3)

MAJOR RECOMMENDATION 2: A COM vendor should be selected as soon as possible in 1980 or early 1981 to upgrade the existing records to MARC, to merge the duplicates, and to generate the initial statewide data base and COM catalog, even with the limited funds available.

COST ESTIMATE: $4,000 - $8,000 (to select the vendor)

2.4.2 Summary of Costs for Statewide Data Base and COM Catalog

1. Selection of COM vendor: $4,000 - $8,000 (Recommendation No. 2)

2. Generation of statewide data base: $25,000 (1 million titles) - $50,000 (2 million titles)

3. Generation of COM catalogs (first edition): $90,000 (350 copies - 1 million titles) - $180,000 (350 copies - 2 million titles) (Section 2.3.1)

2.5 CIRCULATION SYSTEMS

Libraries in many other states have in the past used a somewhat informal, and partially incomplete, process to acquire automated circulation systems from various vendors. Today as new systems are acquired, in Wisconsin and elsewhere, there are expectations that the new circulation systems will support a network environment - a much larger group of libraries, patrons, and circulation load than was required of the earlier systems. There is now the very real possibility that the new systems will not be able to handle the higher circulation load (which could result in fewer libraries being supported by the system than expected - creating higher costs for the libraries on the system). (6.2)

MAJOR RECOMMENDATION 3: Each library, system, or consortium selecting a circulation system should participate in a formal selection process including: the generation of system requirements, documentation of an RFP (Request For Proposal), formal evaluation of the vendors, analysis of compatability with other Wisconsin automated circulation systems, conduct of live benchmark and acceptance tests, and revision of contract terms to protect the library from poor system and vendor performance. (6.3)

a) COST ESTIMATE: $10,000 - $15,000 (per selection, initially - utilizes an outside consultant),

b) then $2,000 - $5,000 (per selection, after Major Recommendation No.6 is implemented - utilizes state DPI/DLS consultants).

2.6 BATCH UNION LIST OF SERIALS

There are many lists of serial records in Wisconsin libraries, primarily in the public libraries, the University of Wisconsin, and other academic libraries. Most of the lists are produced on COM or are hardcopy listings of computer printouts; in either case, the master file is in machine readable form. A few libraries have copies of other libraries' serial lists; this is the exception rather than the rule. Some local Union Lists of Serials have been developed, but none of them provide a sufficiently broad range of coverage for statewide use. It would be useful to libraries in Wisconsin to have access to a Union List of Serials (ULS) of as many library serial titles and holdings as possible; this would provide a finding tool for individual serial and journal issues when a patron requires a copy of, or wishes to borrow, a specific journal article. (9.1.3)

MAJOR RECOMMENDATION 4: An ad hoc committee composed primarily of serial librarians, plus some library administrators and inter-library loan librarians, should review existing in-state and other ULS systems and select one for use in maintaining a statewide ULS. It may be necessary to modify an existing ULS system, or develop a new statewide ULS system. The importance of a statewide ULS as a finding tool for serial material is important to the successful operation of many libraries and is a major resource sharing tool.

COST ESTIMATE: $3,000 - $6,000 (for generation of requirements and system selection only)

2.7 FUNDING FOR AUTOMATION

In general there is limited funding available for automation in most Wisconsin libraries. Automated systems cost money to implement. In many cases the major costs are for one-time activities such as the purchase of equipment and the conversion of records to machine readable form; the ongoing operational costs tend to be smaller by comparison than one-time costs and, once the initial activities have been paid for, the ongoing costs can often be shown to be considerably less expensive than the original manual system, especially when growth and inflation are taken into account. By investing in technology, the libraries in Wisconsin can receive cost savings and service improvements for many additional years.

Other services, such as rapid and effective interlibrary loan, cannot be achieved at all without the use of new technology. Some procedures, including cataloging a newly arrived title, must be repeated at every library in the state buying the same title at the high cost of original cataloging if the technology of a bibliographic utility such as OCLC is not used. With adequate financial resources to pay for vendor services such as conversion and upgrade of records to the MARC format, and generation of a COM catalog, there can be substantial improvement in library services in Wisconsin along with the possibility of major cost reductions; automation has the potential of achieving both.

MAJOR RECOMMENDATION 5: The Department of Public Instruction/Division for Library Services, UW, other academic libraries, the public library systems, schools, school districts, Cooperative Educational Service Agencies, and public library budgets should include additional dollars for automation over the next 5 years. Several of the larger libraries can also provide automation support to other libraries on some cost recovery basis. The Department of Public Instruction/Division for Library Services (DPI/DLS) and individual libraries will need extensive funding to support the automation committees and task forces, the purchase of terminals and readers for the Reference and Loan Library and other libraries, retrospective conversion and the COM catalog, the vendor costs to upgrade records and generate the COM catalog, and the new automation consulting staff. Suggestions

for automation projects for libraries of all types and the Department of Public Instruction/Division for Library Service are described in Chapters 12-15.

COST ESTIMATE: Miscellaneous (see individual Chapters 7-10 and Part IV of this report)

2.8 AUTOMATION CONSULTANTS

There is not sufficient manpower nor expertise in the state to assist libraries, consortia, and systems in planning, selecting, testing, and installing automated systems. To solve this problem of assimilating experience and expertise and sharing it with the next group of libraries planning automated systems, a team of automation consultants is proposed.

MAJOR RECOMMENDATION 6: The Department of Public Instruction/Division for Library Services should hire 1 or 2 new consultant staff with experience in automated library systems, and train some of the current consultants in the various areas of automation, including: circulation systems, data bases, COM catalogs, vendor contracts, RFPs, and vendor evaluation. These consultants should be available to work with all types of libraries throughout the state in performing their automation planning and implementation activities. The cost for the 1 or 2 additional consultants should be added to the Department of Public Instruction/Division for Library Services permanent budget at the senior consultant level, and additional dollars should be added to the travel budget for the new and the existing staff for visits to conference exhibits and vendor and user sites of specific automated systems. (10.1)

COST ESTIMATE: $30,000 - $60,000 per year, including travel.

2.9 WISCONSIN STATEWIDE AUTOMATION COORDINATING COMMITTEE (WSACC) AND TASK FORCES

In order to define the various automation project tasks and carry them out, a Wisconsin Statewide Automation Coordinating Committee

(WSACC) is described; the WSACC's primary responsibility is to coordinate all of the statewide automation project work. For each new automation project a project task force is established. (12.1)

> MAJOR RECOMMENDATION 7: The WSACC purposes and functions should be reviewed, revised as necessary, approved, and the WSACC be established as soon as possible. The WSACC would then be responsible for initiating the new automation projects according to a WSACC-established priority list.
>
> COST ESTIMATE: $4,000 - $8,000 per year (mostly travel)

2.10 THE FIVE YEAR PLAN

Part IV (Chapters 11-15) contains a series of recommendations, projects, schedules, suggested responsibilities, and project interdependencies for each of the years 1980/81 to 1982/83 plus some follow-on activities which would occur in 1983/84 and 1984/85. There are too many details to review in this Executive Summary; the readers are urged to review those portions that deal with their own libraries plus the general recommendations that apply to all libraries. The sections on The Emerging Future of Automation Technology (15.1) and The Library Responsibility (15.2) are repeated here for emphasis.

2.11 THE EMERGING FUTURE OF AUTOMATION TECHNOLOGY

New vendors and new automation products will continually appear; existing products and services will change in character, functions, and costs. As new technology appears, vendors will absorb the relevant portions in their new products. As the national library network emerges during the 1980s, libraries will be able to take advantage of the new services, first through utilities, later from network brokers and commercial vendors, and finally through the libraries themselves.

In general, computers and file storage are becoming more powerful and less expensive every year. By 1985 it will be possible for a network broker (such as WLC) and perhaps an area consortium to own a computer more powerful than the present computers at the cataloging utilities (OCLC, RLG/RLIN, etc.). The technology and the costs will eventually permit a powerful and relatively inexpensive standalone computer in the

library to perform acquisitions, cataloging, circulation, patron and library staff searching functions, as well as word processing, message switching, electronic conferencing, and special report generation.

Some of this will occur before 1985; these early systems will be marketed and a few pioneering libraries will be using some of these services by 1985. By 1990 these systems will be the norm rather than the exception.

2.12 THE LIBRARY RESPONSIBILITY

It is possible for Wisconsin libraries to take advantage of this technology. The WSACC and task forces, through the individual Wisconsin libraries, can provide the information to the administrative boards, trustees, presidents, etc. It is up to the various libraries to justify the expenses of automation in order to achieve the results of better service to the patrons and provide lower unit costs in some areas.

The United States is one of several industrial countries emerging into an information age. Computers and information systems will be a powerful and complex part of our society. During 1985-1990 there will be more powerful information services available in the home than are available today in any library; the use of teletext and home computers will bring personally selected portions of vast information files into the home electronically.

Libraries must be prepared to provide services in this environment or face continually reduced usage. Academic and school libraries have a responsibility to prepare the students for this environment as part of the academic resources of the institution. This same technology will also change the basic media and possibly the basic form of education; libraries are part of this process.

These products and services cost money; the libraries and their institutions will be facing serious economic decisions. It is to the benefit of the patrons and institutions to have the library staff, administrators, and governing boards knowledgeable and informed about the services, benefits, and costs of available technology.

PART II

CURRENT SYSTEMS AND THE NEED FOR A STATEWIDE DATA BASE

Chapter 3

BACKGROUND

3.1 CURRENT AUTOMATION IN WISCONSIN LIBRARIES

This section presents a summary of existing automated systems in all types of libraries in Wisconsin. On-line and batch cataloging, circulation, and union list of serials systems are described; the amount of library material represented by these systems and the number of records in the system files are summarized.

3.1.1 On-Line Cataloging Systems

Fifty-four Wisconsin libraries utilize the OCLC system (OCLC Inc., Columbus, OH) to catalog approximately 600,000 titles per year for 86 libraries. One title is cataloged on OCLC every twelve seconds throughout the year by Wisconsin libraries. Over 3.5 million computer produced catalog cards are received annually by these libraries. Magnetic tapes with the individual library's bibliographic information are sent by OCLC to WLC (Wisconsin Library Consortium) for retention and future processing.

3.1.1.1 Distribution by Type of Library

As of September 1980, these libraries have cataloged approximately 1,800,000 titles on the OCLC system and WLC has all of these records on computer tape, representing the titles cataloged since February 1975.

As of December 1979 the eighteen public libraries (that have been on OCLC for more than 6 months) have cataloged 381,000 titles (36.8% of the total) and are adding 180,000 titles per year (an average of 10,000 titles per year each). There are an additional ten public libraries that are just beginning operations on OCLC. Through December 1979 the nineteen academic libraries (on OCLC for more than 6 months) have

cataloged 654,000 titles (63.2% of the total titles) and are adding approximately 235,000 titles per year (an average of 12,000 titles per year each). Fifteen of the academic libraries are a part of the UW system and four are from other academic institutions. There are an additional five academic libraries also beginning operations on OCLC.

3.1.1.2 Geographical Distribution

The geographical distribution of the library material cataloged through OCLC (from computer tape records available) shows a high concentration in major metropolitan areas and smaller cities that have a public library and a UW campus on OCLC. The Madison area has the most titles (310,000, 30% of the state total), followed by Milwaukee (229,000 titles, 22% of total), Eau Claire (83,000, 8% of total), Green Bay (75,000, 7% of total), LaCrosse (62,000, 6% of total), and Oshkosh (61,000, 6% of total). These six areas account for 79% of the OCLC records.

Note that these figures do not necessarily reflect the geographical distribution of all library material in Wisconsin libraries; the figures do reflect the distribution of available computer tape records from those libraries which obtain automated cataloging service from OCLC. At the time of this writing, OCLC is supplying all of the automated on-line cataloging to Wisconsin libraries.

3.1.1.3 Major Contributors to the Wisconsin Data Base

Seven large public and academic libraries have contributed 56.7% of all Wisconsin OCLC records. As of December 1979 the contributions were: UW - Madison (157,000), UW - Milwaukee (112,000), Madison Public (98,000), UW - Eau Claire (63,000), Milwaukee Public (59,000), UW - Green Bay (50,000), and Marquette (47,000).

3.1.1.4 Interlibrary Loan (ILL) using OCLC Cataloging Files

Each of the 54 libraries utilizing OCLC is able to search the entire OCLC data base, consisting of over 6 million bibliographic records representing books, serials, films, etc. Appended to each of these records is a list of "holding symbols" that designates which libraries

in OCLC have cataloged that particular item; appended to these 6 million bibliographic records are a total of over 50 million holding symbols. While this indicates a copy of each title is held in an average of 8 different libraries, a large percentage of the cases show that there is a single library (out of 2,000 OCLC libraries in 50 states) holding a particular book. Some popular titles, on the other hand, show hundreds of libraries on the holdings list.

The ability to locate the only known copy of a book from the machine readable portion of over 2,000 libraries' collections, and accomplish this in a few seconds, is a very valuable ILL resource, and one which will continue to be heavily used by OCLC libraries in Wisconsin and elsewhere. The Wisconsin Reference and Loan Library, WILS, and the Health Science Library make use of the OCLC system to locate newer materials at OCLC libraries in Wisconsin and out of state on behalf of other Wisconsin libraries.

3.1.1.5 Limitations to Resource Sharing Through OCLC

There are two major limitations to Wisconsin resource sharing using the OCLC/ILL system. The first limitation is the fact that only those titles cataloged through OCLC by the 54 Wisconsin member libraries are represented as Wisconsin holdings in the data base. Therefore the OCLC data base contains the cataloging of 86 Wisconsin libraries (and no other Wisconsin libraries) and for most of these libraries only a portion of their collections is in the data base. In general, the larger and older the library collection the smaller the percentage of titles in the OCLC data base. The Milwaukee Public Library as a large library, for instance, has less than 6% of their titles in OCLC (approximately 59,000 titles); therefore another OCLC library has no knowledge of the other 94% of the Milwaukee Public Library titles (approximately 861,000 titles) when searching on OCLC.

Medium size public libraries tend to catalog fewer than 10,000 titles per year and turn over a large portion of their collections every few years, so the percentage of their collections on OCLC tends to be somewhat higher. In addition, some public libraries are using OCLC to convert all of their remaining titles so their entire collection is in the OCLC data base. Madison Public Library has almost completed the conversion of their collection to the OCLC data base. The percentage of the collection on OCLC for academic libraries falls somewhere in between that of the small or medium-sized public library and that of the older or larger library, partially as a reflection of the percentage of the library's collection composed of recent acquisitions.

The second limitation to Wisconsin resource sharing is the fact that only libraries that are members of OCLC may obtain terminals and search the OCLC data base. There are therefore only 54 Wisconsin libraries and consortia that can search the OCLC data base. In some cases, it is possible to designate a library or consortium as a "processing center" which allows them to catalog, search the files, and perform ILL transactions on behalf of other libraries; the State Agency Library Processing Center (SALPC) is a processing center for any State Agency libraries in Wisconsin that wish to use SALPC's services. Southwest Wisconsin Library System (SWLS), Racine County, and Arrowhead Library System (ALS) have recently become OCLC processing centers, serving many small public libraries. Thus, the 54 OCLC member libraries provide cataloging service for 86 libraries.

As a result of these two limitations, then, only 54 Wisconsin libraries may access the 6 million OCLC titles held by libraries all over the U.S., including 1,800,000 holdings (copies of books) in Wisconsin. The number of unique Wisconsin titles (as opposed to duplicate copies of the same title at various Wisconsin libraries) in the OCLC files is not known, but a reasonable assumption would expect between 900,000 - 1,200,000 unique titles to be represented in the OCLC file for Wisconsin libraries.

> MAJOR REQUIREMENT: What is needed, then, for improved resource sharing in Wisconsin is to provide a larger data base of Wisconsin holdings, representing as many libraries, titles, and holdings as possible, that would be available for ILL searching by all libraries in Wisconsin.

The particular Milwaukee Public Library example described above (59,000 titles in OCLC and 861,000 titles not in the OCLC data base) was chosen to illustrate an essential point. The ENTIRE Milwaukee Public Library bibliographic and holdings file exists in machine readable form as a product of Milwaukee Public Library's circulation system. By utilizing other forms of technology described later in this report this entire Milwaukee Public Library file could be made available in improved format to ALL libraries in Wisconsin, thus overcoming both of the limitations to resource sharing (in this example, for the Milwaukee Public Library collection) posed by using the OCLC system for interlibrary loan.

3.1.2 Circulation Systems

3.1.2.1 On-Line Circulation Systems

Four Wisconsin libraries provide on-line circulation services to their patrons. At these libraries a library circulation staff member may check out books for a patron by passing a "light pen" across a special label on the patron's library card and a special label in each of the books. These special labels are bar code labels similar to the striped labels on grocery products. This on-line checkout procedure takes a few seconds per book, resulting in faster service for the patron, and eliminates the need to write out any information on slips of paper, make impressions of embossed cards, or photocopy book cards.

The automated library circulation records are also more accurate and can be searched by a variety of indexes; records of non-automated systems may only be searched by a single access point, such as date due (slips) or date borrowed (photocopy).

These four installations serving one public and three academic libraries circulate 4,990,000 books per year (one book every 2 seconds throughout the year). There are 1,300,000 bibliographic records in these files (UW - Oshkosh 225,000, UW - Green Bay 92,000, Milwaukee Public 920,000, and UW - Madison - Reserve Book Room 63,000). In many cases, these records represent the only machine readable records for certain titles in Wisconsin. Approximately 40,000 new title records are added each year to these files.

One of the Wisconsin libraries using on-line circulation systems is an academic library (UW - Oshkosh) that has purchased their system from CLSI (Newtonville, MA). This type of system is called a "turnkey" system - the library has purchased the hardware (including the computer, disk files, terminals, etc.), the software, and maintenance (repair) services. The complete systems are installed in the library and are self-contained "stand-alone" operations.

These on-line CLSI circulation systems have the ability to access, search, and perform an ILL from a library on one system to another library's files on a second system. For example, a circulation terminal at UW - Oshkosh (normally connected to its own computer and files) can also access the files of the North Suburban Library System (Illinois) computer and request the loan of a North Suburban book. This example is used only to illustrate a technical capability; it is not presented as a

suggestion for expanding the ILL network. This capability could be utilized in the event other Wisconsin libraries install the CLSI system.

This process is relatively straightforward whenever the systems come from the same vendor. This picture will change in the near future as more libraries and systems select new circulation systems; it is expected that some of these new systems will be supplied by different vendors. The inter-system ILL request may be more difficult or impossible to perform if the systems are not compatible and the libraries have not required the vendors to provide this interface.

The system installed in Milwaukee Public Library is the largest system in Wisconsin and one of the largest systems in the U.S. The Milwaukee Public Library system circulates 4,500,000 books per year (over 91% of the total Wisconsin automated circulation activity). The reserve room installation at UW - Madison circulates approximately 250,000 books per year, UW - Oshkosh's CLSI system circulates 180,000 books per year, and UW - Green Bay's system developed in-house circulates 60,000 books per year.

3.1.2.2 Current Planning Activities

At the present time several libraries and systems are in various stages of planning and selection of vendors for automated circulation systems, including an academic consortium consisting of UW - Stout, UW - Eau Claire, UW - River Falls, and UW - LaCrosse. Racine County and Arrowhead Library Systems, Eau Claire, Madison, Waukesha, LaCrosse, and Appleton public libraries and the UW - Madison Library System are each planning for the installation of automated circulation systems.

One group of libraries is planning an interesting cost allocation for the circulation system; the system is generating external funding in order to purchase the central system (computer, files, etc.), and requiring the member libraries to fund only their own terminals, shared line costs, and shared costs of ongoing operational expenses.

3.1.3 Acquisitions, Serials, and Bibliographic Search Services

3.1.3.1 Acquisitions Systems

At the present time, two major book jobbers (Baker and Taylor, and Brodart) offer on-line book ordering as part of their acquisitions services. In addition, these jobbers and several others (Blackwell North American, etc.) offer acquisition tapes with the book orders; these tapes contain full bibliographic data for each title ordered by a library. The tapes are in the MARC tape format and vary in cost from $0.15 per record to free, depending upon the book contract and other factors.

Currently no Wisconsin libraries are utilizing on-line book ordering systems. No Wisconsin libraries are ordering acquisition tapes from the book jobbers.

OCLC is in the process of developing an acquisitions system which will be in field testing during 1980. When this system becomes generally available some of the OCLC libraries in Wisconsin will likely begin using the system.

For more information about acquisition and book ordering systems, see Chapter 8.

Madison Public Schools Media Center, Milwaukee Public Library, and UW - Platteville each have locally developed automated acquisitions systems, including ordering, receiving, and fund accounting functions. The records from these data bases are in machine readable form.

3.1.3.2 Serials Systems - (Serials Lists and Union Lists Of Serials)

There are several batch Union List of Serials (ULS) systems in use in Wisconsin libraries. The University of Wisconsin - Madison has developed a single campus multi-branch ULS system and data base. The 68,000 University of Wisconsin - Madison serial titles appear in a printed bookform ULS available at several locations throughout the University of Wisconsin campuses. Other area serials lists also exist in manual and machine readable form.

Many libraries have printed union lists of serials including the 6000 serial title Wisconsin Union List of Biomedical Serials. There are many more union list of serials files, COM, and published copies showing the serial holdings of special libraries in Wisconsin than have been described here.

The Minnesota Union List of Serials (MULS) is being used to develop a Wisconsin ULS of approximately 185,000 titles. This ULS should be available in early 1981.

3.1.3.3 A/V Lists and Union List Of Audio/Visual Materials

Several libraries have developed single library lists and multiple library union lists of A/V materials: Southwest Wisconsin Library System (35,000 titles), District One Technical Institute (30,000 titles), North Central Technical Institute (25,000 titles), Madison Area Technical College (15,000 titles), and Gateway Technical Institute (a combined monograph and A/V catalog of 70,000 titles). Several schools also have developed computer-produced lists of A/V holdings for their own collections. These lists represent a valuable library resource. It would be useful to these institutions and others throughout the state if a combined Union List of A/V materials could be developed and include the above 105,000 to 175,000 titles. This combined ULS could eventually become part of the statewide data base.

In addition to the printed lists, the UW - Madison Instructional Media Center has converted their entire A/V collection using OCLC, thus making it available for on-line searching. These titles also appear on the OCLC tapes and could be a part of the statewide data base.

3.1.3.4 Bibliographic Search Services

In general only the larger special libraries and in some cases a large public or academic library with the necessary budget and the clientele perform on-line bibliographic searches using the commercial search services. The Reference and Loan Library performs search services for public library patrons through a contract with the UW - Madison Engineering Library. Vendors such as Lockheed, SDC, BRS, and the New York Times are utilized for a wide variety of information; services such as NLM's MEDLINE are used for medical information, and LEXIS and JURIS for legal information. These systems supply information printed at the user's terminal or on the vendor's computer printers rather than in machine readable form. The derived information about journal articles, as the result of a specific patron request, shows the journal name, issue, page numbers, author, title, abstract, and keywords for specific articles.

If the library does not own the journal issue in question, the library must locate a copy of the requested article. The bibliographic data base used for the search does not contain any library holdings; for this information the union list of serials, described in the previous section, must be utilized.

3.1.3.5 Wisconsin Dissemination Project - WDP

The Wisonsin Dissemination Project (WDP) is a statewide on-line search service for K-12 teachers and administrators. Staff at seven Cooperative Educational Service Agencies (CESAs) and at the WDP office at the Department of Public Instruction provide computer-assisted searches of the Educational Resources Information Center (ERIC) files. WDP searchers use the WISE program at the Madison Academic Computing Center to search ERIC. Searches of other national data bases available through Lockheed's DIALOG or BRS are done at the WDP/DPI office.

3.1.3.6 Other Machine Readable Files

There are a few additional machine readable files that exist in some libraries in the state and on library book jobber and COM vendor files. In addition to the OCLC cataloging records (see 3.1.1), circulation records (3.1.2), acquisition, ULS, and UL(A/V) records (3.1.3), there are many other Wisconsin machine readable data bases, including Madison Public School's 75,000 title catalog, Madison Area Technical College's 8,000 title Technical Monograph catalog, 25,000 Technical Periodical Articles, and 4,000 title Technical Pamphlet catalog, UW - Platteville's 30,000 title Map catalog and 9,000 title thesis catalog, Fox Valley Technical Institute's 9,000 title catalog and the monograph portion of the Gateway Technical Institute's 70,000 Monograph and A/V catalog.

Certain book jobbers (BNA, Baker and Taylor, Brodart, etc.) maintain machine readable book order information for libraries that have ordered material or accepted approval plan material. This jobber information could be converted into useful bibliographic data for customer libraries.

3.1.3.7 Other Automation

Several CESAs (Cooperative Education Service Agencys) and schools have purchased microcomputers for instructional use and many public libraries have purchased or are considering the purchase of microcomputers for both internal use and also as a new media for patron use. Computer programs are available for educational (math, spelling), operational (checkbook, mortgage), programming (write your own programs), and entertainment (horoscope, games, puzzles) purposes.

The use of microcomputers in libraries and schools is expanding at a very rapid rate. CESA 9 has installed over 80 microcomputer terminals (terminals with a built-in microcomputer, a TV screen, and a pair of floppy disk drives - at a total cost of approximately $2000 each) in the CESA 9 schools. The CESA headquarters has collected, tested, and distributed over 120 educational microcomputer programs in biology, business, chemistry, English, logic, mathematics, music, physics, social studies, and statistics.

Many libraries are reviewing the potential use of microcomputers for internal uses; some libraries have developed applications to produce book lists, very limited circulation lists for media materials, on-order lists and purchase orders, catalog cards, accounting reports, personnel lists, small information and referral files, current periodicals lists, and many other applications.

With the proliferation of microcomputers and new applications, it is becoming increasingly difficult to determine which libraries have developed specific applications and are willing to share copies of the computer programs and instruction manuals. Libraries, schools, and other organizations are beginning to generate directories of this information, and, in some cases, clearinghouses of actual programs and program documentation.

3.2 SHARED RESOURCES: ACCESS TO BIBLIOGRAPHIC DATA

3.2.1 Location of Material

When a library does not have the material required by its patron the library will attempt to locate and borrow the material from another library. The difficult element in an interlibrary loan activity is the

location of the material; tools for locating materials in other libraries are limited by the number of libraries and proportion of their respective collections represented in the particular finding tool. Without an adequate finding tool the library has no rapid, cost effective, or convenient way of determining which of the other libraries have the requested material; at best, this determination is an intuitive, somewhat random, costly, and time consuming venture.

Although most of a library's circulation utilizes relatively current materials, much of interlibrary loan (ILL) requires knowledge of the location of non-current materials. This component of ILL (the location of older, little-requested material) adds significant costs and time to current ILL operations, often resulting in the patron not receiving the material in a timely manner, if at all.

3.2.1.1 Assumed Locations

Because full knowledge of the holdings of all libraries is not available, the traditional assumption in ILL has been that all materials not located in the local library are available only at larger libraries. This has led to a disproportionate burden of ILL requests on the largest libraries, with the resultant imposition of ILL charges by these libraries. In fact, experiments in Illinois and elsewhere have shown that the amount of comparatively unique material in smaller libraries is much greater than originally assumed and that this material is more often available in a timely manner than is the same title located in a larger library. However, without knowledge of the location information, area cooperation will not be more effective than when such ILL tools as the National Union Catalog and OCLC files are used. One of the best location tools currently available for public libraries in Wisconsin is the Milwaukee Public Library COM catalog on microfiche; this COM catalog contains approximately 920,000 titles of materials held by Milwaukee Public Library and 12 other libraries in the Milwaukee County Federated Library System.

3.2.1.2 Effective Location Tools

In ILL transactions the borrowing library should have the burden of locating the material and sending a specific request to a known owning library. Without improved location information too many requests are sent to libraries which only might have the material, thus adding a

location and verification burden to large libraries which do heavy leanding. ILL is fastest and least expensive when done library-to-library rather than through intermediary centers. This, again, requires knowledge of location information through a statewide data base. When a title cannot be located on the statewide data base, area ILL centers will be needed for bibliographic verification and location information.

Knowledge of the location of materials within the state also aids libraries in making informed acquisition, retention, and discard decisions about little-used materials. This knowledge should reduce the need for costly storage facilities for lesser-used materials while ensuring their availability. In order to make the most effective use of this new information it is necessary for libraries to formulate collection development policies on a cooperative basis.

3.3 THE WISCONSIN STATEWIDE DATA BASE

The location tools available today are fragmented and incomplete. What is needed, therefore, is a tool that contains as much information about Wisconsin library materials as possible, is relatively inexpensive, and is available to as many libraries as possible.

> The most cost effective and timely manner of producing a statewide location tool is to generate a single comprehensive statewide machine readable data base from existing machine readable records. Once the initial version of the statewide data base has been developed many products can be derived from this data base including: a statewide finding tool, local and area finding tools, circulation files for local and area circulation systems, patron access files for local, area, and statewide on-line catalogs, etc.

The creation of the initial data base from existing sources (OCLC records, UW - Madison circulation records, CLSI records) is described in detail in Chapter 5, Data Base. The growth beyond the initial version and maintenance of the data base is also described in Chapter 5.

3.4 AVAILABILITY OF WISCONSIN MACHINE READABLE RECORDS

The following are the largest existing machine readable files representing holdings of Wisconsin libraries. The file size, record format, and conversion (upgrade) requirements to a full bibliographic record are described.

1. OCLC Tapes. These 1,800,000 records as of August 1980 are full bibliographic records (in the MARC format), including the library's local call number, copy information, and location data. The data from these records need to be merged to eliminate records of duplicate titles, while retaining the local call number and copy information from each library.

2. Milwaukee Public Library Circulation System Title, Item, and Holdings File. These 920,000 records are used for an on-line circulation system developed by Milwaukee Public Library; the records contain author, title, call number, series notes, language, publication, location and copy information. The tape from this data base could be upgraded to full bibliographic records by a commercial vendor.

3. CLSI Circulation Records. These 225,000 records are brief records for circulation purposes that resice on the CLSI disks and contain brief author and title data, and full call number, copy, and location data and in some cases publisher, LC card number, and other miscellaneous data. The files from the UW - Oshkosh CLSI computer must be copied to tape, and upgraded to full bibliographic records by a commercial vendor.

4. Madison Public School Records. These 75,000 catalog records contain author, title, location and copy information. The tape from this data base could be upgraded to full bibliographic records by a commercial vendor.

5. UW - River Falls Records. These 165,000 bibliographic records contain author, title, publisher, call number, and LC card number. These records could be upgraded to full bibliographic records by a commercial vendor.

6. UW - Green Bay Records. These 92,000 records are used in systems developed at UW - Green Bay; 13,000 of these records contain LC card numbers. These records could be upgraded to full bibliographic records by a commercial vendor.

7. Book Jobber Records. Several book jobbers can generate the appropriate bibliographic records by recreating old library book orders. For instance, a library could request a copy of a bibliographic record for each title ordered from their book jobber in the past three years, or each title ordered from an approval plan. Some of the book jobbers retain sufficient machine readable information on old customer orders that the titles ordered can be determined, and a full bibliographic record can then be duplicated for the library. This one time method of retrospective conversion could be very cost effective.

8. UW - Madison Reserve Book Room Records. These 63,000 records are in machine readable form and contain author/title, call number, date, publisher, and editor. These records could be upgraded to full bibliographic records by a commercial vendor.

As a final step, the vendor will be required to merge the OCLC, Milwaukee Public Library, UW - Madison, CLSI, Madison Public Schools, and the other libraries' records to eliminate records of duplicate titles, while retaining all local call number, copy, and location data. The initial version of the statewide data base would then be complete.

3.5 COOPERATION

In order to make effective use of resource sharing and to reduce costs of shared projects such as the development of a union catalog finding tool, ILL, shared area circulation systems, and retrospective conversion, there must be cooperation among all types of libraries. This inter-type library cooperation will not be easy due to governance and clientele constraints; special libraries may not be able to serve outside patrons, or private academic institutions may not be able to serve non-academic patrons. These are difficult, but not impossible, barriers to overcome.

There are a few points about cooperation which should be kept in mind.

1. Different types of libraries are more likely to cooperate where there is an ECONOMIC or SERVICE ADVANTAGE to their participation.

2. If there is an economic advantage, cooperation is easier to achieve. On the other hand, if there is not an economic

advantage, the service advantage must be overwhelming (not merely "nice").

3. With cooperation, there is a form of synergy involved; each participant can receive much more than it gives - for example, a cooperative project for retrospective conversion means that a library does not have to key in a full bibliographic record if another library has already converted this title to machine readable form.

4. With cooperation, some projects can be achieved which are not possible for a library to achieve alone - for example, production of a COM union catalog or an on-line union catalog.

3.6 STANDARDS

In order to take maximum advantage of technology, commercial services, and the emerging national network, it will be necessary to adhere to national standards. Although the form and procedures are not defined in detail, bibliographic records should conform to:

1. standard record formats - MARC II Communications Format.

2. cataloging standards - AACR2

3. authority control

In order to be ready, Wisconsin libraries will have to establish practices which are accepted as national standards. This will insure that Wisconsin records can be used by other libraries, and Wisconsin libraries can in turn use records created by other libraries, including the Library of Congress (LC).

1. The cost of creating non-standard records will become more and more expensive, while failing to provide comparable increased utility to users.

2. The establishment of, and agreement upon, standards may prove to be one of the most difficult aspects of state-wide automation.

3. The Wisconsin Statewide Automation Coordinating Committee (WSACC) (see Section 12.1) should be responsible for establishing standards for statewide bibliographic control, resource sharing, the data base, and COM catalogs. The WSACC should also participate in the definition, approval, and eventual implementation of these statewide standards.

Chapter 4

ON-LINE CATALOGS

The ultimate finding tool for Wisconsin library materials is an on-line catalog, which would permit Wisconsin library staff and patrons to use computer terminals in their local libraries to determine the existence, and location of desired materials. An on-line catalog would be a computer system containing files of bibliographic and holdings information for one or more libraries. The definition of an on-line catalog includes the ability to search these files and discover the existence of available library materials by the use of computer terminals, completely eliminating the need for a card, book, or COM catalog. The use of a card, book, or COM catalog in addition to patron use of computer terminals is not an on-line catalog; this limited use is defined as on-line patron searching. On-line catalogs are not available at the present time, nor are they likely to be in widespread use over the next 5 years. While other activities such as the statewide data base and COM catalog and circulation systems have a higher priority (see Part IV), it is important to include on-line catalogs in the long-range plans for library automation in Wisconsin.

This chapter provides a variety of planning information for on-line catalogs. An on-line catalog would contain full bibliographic records which could be used as a source of cataloging for the library staff or for bibliographic verification for the library patron. Associated (or linked) with each bibliographic record which represents a book, film, phonograph record, or other item, would be an indication of each library that owns the material, the local call number, volume, copy, and location.

Each library would be able to search the on-line catalog file by any of a variety of access points, including any of the authors, individual words in the title, subject headings, call number, LC card number, ISBN, and any other useful access points. For records selected as valid, the user should be able to review full or partial bibliographic information, a list of libraries owning the book (based on a pre-selected list of area, in-state, or special association libraries), and the local library information about the particular item. This scenario of an on-line

catalog should be valid for a statewide, area, or local library on-line catalog. With a local library on-line catalog, only the holdings of the local library would be included in the data base, and therefore only local holdings information would be available for display to the library staff or patron.

4.1 GENERAL REQUIREMENTS OF AN ON-LINE CATALOG

For an on-line catalog to replace the current card, book, or COM catalog, several conditions must be met.

1. The quality of bibliographic data of the on-line catalog must be equal to or better than the original catalog.

2. The number of access points in the on-line catalog must be equal to, and preferably greater than, the original catalog, including as a minimum the title, any author, and subject heading. Added access points could include title keywords, call number (with truncation), series, LC Card Number, ISBN, publication date, special vocabulary index terms, and cross-references.

3. The form of access to the bibliographic records should utilize some form of interactive searching providing the user with intermediate search results at each step in the search; this allows the user to react to the search results and influence the next step in the search.

4. The system should provide more than one level of user interface to accommodate the various levels of user sophistication and expertise. For instance, a menu system might be quite adequate for a novice or naive user, yet could prove to be quite inefficient and time consuming for an experienced searcher. A structured formal search language with Boolean operations would provide an efficient interface for an experienced user, and would obtain the required search results in a minimum of user time; this same search language would likely prove much too complex for a naive user.

5. The system should provide some on-line training tools to assist the user in learning how to become an experienced searcher. An on-line training manual with some Computer Aided Instruction (CAI) features would provide much of this capability.

6. With the entire file (all titles and holdings) on-line, the system must be capable of handling the expected searching load within acceptable intermediate and total response time ranges (e.g., an intermediate response time of 5 seconds average to 10 seconds peak load for search languages, or 2 seconds average to 5 seconds peak for a menu system). The intermediate response time is the time required for each step in the search procedure; the total response time is the time to obtain the final result. As an illustrative example, if the menu system requires an average of eight steps or transactions to find a specific relevant title, the TOTAL user response time is the "5 second average intermediate response time" plus the "6 second user think time" plus the "3 second user keyboard time" (5 + 6 + 3 = 14 seconds) multiplied by the 8 transactions for a TOTAL response time of 112 seconds (1 minute and 52 seconds). Interactive searching makes a heavy demand on the computer and disk files; it is vital for the system to be able to handle the average and peak searching load. The ability to adequately handle the search load is described in Section 4.3.1, System Capacity - A Note of Caution.

7. The system must have a "fail-soft" or backup capability. Since the on-line catalog is the replacement for the current catalog, the unavailability of the system due to a hardware or software malfunction has the effect of denying all searchers access to the catalog. This situation is to be avoided or at least minimized to acceptable levels. This could mean the installation of redundant hardware (extra computer, one extra disk drive, etc.); another approach is the provision of a backup catalog such as a COM catalog and a small number of COM readers at each location where there are on-line terminals.

8. The system must provide for rapid and efficient maintenance of the data base. Since libraries add from a few to several hundred new titles and hundreds to thousands of new volumes to their individual collections each day, the system must update the files to reflect this new status. The files should be updated on a daily or other periodic cycle. An on-line or batch automated interface with a cataloging system to provide bibliographic records to the on-line catalog file is highly desirable and would reduce the manual effort to keep each of these systems current and synchronized. A similar interface to a cataloging system or a circulation system to capture the local copy information is also desirable.

9. The on-line catalog must accurately reflect the library's holdings. This simple statement implies that the on-line catalog will reflect new items added to the collection, items removed from the collection, and items moved to other parts of the collection. The on-line catalog may also reflect titles on order.

10. The on-line catalog must reflect the local and national authority files and cross-references for personal and corporate names, subject headings, series, and uniform titles. The system should accept the patron's popular terms, then, with the patron's knowledge, find the appropriate local or national authority term and select the appropriate records for the patron.

11. The system should protect against unauthorized transactions from patron terminals which could alter or damage the on-line catalog file. In general, no update transactions should be permitted from patron terminals.

4.2 POTENTIAL SOURCES FOR ON-LINE CATALOG SYSTEMS

4.2.1 OCLC On-Line Catalog

The OCLC system, as described in Section 3.1.1, has several major limitations as an on-line catalog: 1) only OCLC users may access the system (currently limited to 54 Wisconsin libraries), 2) only the records cataloged by these libraries are shown as Wisconsin holdings in the data base (approximately 1% - 10% of the total holdings of 86 libraries), 3) there is no local call number, copy or location information on the OCLC on-line file, and 4) the searching is limited to a few of the necessary access points and does not provide searching by every author, subject headings, local call number, etc.

For these reasons, the current OCLC system cannot be used as a statewide, area, or local library on-line catalog; it can and is used as an effective union catalog finding tool for the recent holdings of the 54 Wisconsin member libraries (as well as the 2,000 out-of-state libraries).

OCLC is in the process of developing a circulation system for area installation of circulation systems. If the system developed by OCLC provides the capability to maintain local holdings data (which it most likely will be able to do), and provides access by subject headings, local call number, etc., the distributed "circulation" system could be considered a candidate for a local, area and, possibly, (with proper computer-to-computer linking) a statewide on-line catalog.

4.2.2 Local Development of a Wisconsin Statewide On-Line Catalog

The development of a local, area, or statewide on-line catalog is an enormous undertaking. Expertise is required in computers, variable length fields and records, complex file structures, Data Base Management Systems, teleprocessing, timesharing, complex user interfaces, variable output formats, system performance measurements and optimization, and fail-soft design and operations. It is not likely that an in-house data processing center has sufficient experience in all of these areas for it to attempt to develop a system capable of performing tens of millions of searches per year (1-5 searches per second, all year long).

The next section describes some design plans from certain commercial vendors to develop an on-line catalog. The sale price of a commercial system is likely to be 10-50% of the cost of an in-house development, and should be considered as a serious alternative to in-house development.

4.2.3 Commercial Turnkey On-Line Catalogs

4.2.3.1 Cataloging Vendors

The cataloging services currently provide somewhat limited forms of on-line catalog support for patron searching; in some cases the limitation is in the indexing and searching function (e.g., lack of local data and subject searching in OCLC, lack of authority files in RLG/RLIN, etc.) In all cases there is a real limitation on the CAPACITY of the system to handle the large number of patron searches from the central computers.

The number of terminals required for cataloging in most libraries varies from 1 to approximately 15 depending on the number of new titles added per year. The number of terminals required for patron searches on the other hand is a function of the number of patrons simultaneously searching the catalog, the number of possible locations to search the catalog (branches, dormitories, offices), and the complexity of the patrons' search requests; estimates of 5 to 50 patron terminals are not uncommon, with some estimates of over 200-500 patron terminals for large multi-branch libraries.

The computer and disk resources required to perform searching are much higher than the resources necessary to support cataloging; this fact coupled with the fact that there will be many more patron terminals compared to cataloging terminals will saturate any computer trying to offer this service on a nationwide basis. All of the cataloging utilities have realized this capacity limitation and are planning to offer some form of distributed on-line catalog service, where a series of area computers and files will support a relatively small number of libraries. The network brokers (NELINET, SOLINET, etc.) are also considering offering this type of patron access service. The likely timeframe for this service to become generally available is 1982-1985.

4.2.3.2 Circulation Vendors

Most of the circulation vendors also offer some limited form of on-line catalog. Circulation systems have the local item data (call number, copy, and location information) as an integral part of the circulation data base; what is lacking in many circulation systems is a full bibliographic record. This results in a limitation on searching capability; without a subject heading stored in the record, there can be no subject heading index and therefore no subject searching.

Like the cataloging systems, the circulation systems suffer from a serious capacity limitation when trying to perform patron searching while also handling circulation transactions.

Some circulation systems have brief bibliographic records, others have almost full records. Some systems use a structured search command and some a menu system. None of the systems currently supports both of these types of searching, a full bibliographic record, AND Boolean searching.

Several of the circulation vendors are planning this level of on-line catalog support; some vendors will develop the on-line catalog as a separate system, others as a combination circulation/on-line catalog system. The likely timeframe for this service to become generally available is 1982-1985.

4.2.3.3 DBMS Vendors

The developers of Data Base Management Systems (DBMS) are becoming interested in the on-line catalog market. DBMS vendors are computer software developers, such as Software AG, developers of ADABAS (the DBMS used by WLN), and Batelle Columbus Laboratories, developers of BASIS. Some of these vendors have software that can handle a MARC record format, build multiple indexes, and perform complex searches, some with Boolean operations. The DBMS vendors do not provide menu searches.

The DBMS vendors could build an integrated package, including optimum selection of computers, disks, and patron terminals, as well as optimum design of search languages and user interfaces. The DBMS vendors have fewer design constraints than the cataloging or circulation vendors. The timeframe for this development is unknown, but not likely to be generally available prior to 1982.

4.3 SCENARIOS FOR ON-LINE CATALOG IMPLEMENTATION

The preceding sections described the status of on-line catalogs and the potential availability from cataloging, circulation, and DBMS vendors. The statewide on-line catalog system may come from one of several sources.

1. The system may be developed and operated by a cataloging vendor such as OCLC or RLG/RLIN. In this case, the on-line catalog would be an area union catalog of a portion of a state, an entire state, or a multi-state region.

2. The system may be developed by a catalog vendor (e.g., WLN - the Washington Library Network) or a DBMS vendor and purchased and operated by a network broker (e.g., WLC). The catalog would likely be for a statewide or a multi-state region.

3. The system may be developed by a catalog, circulation, or DBMS vendor and purchased and operated by a statewide or area consortium (e.g., WLC, DPI/DLS, or a system); the catalog would therefore be a statewide or area catalog.

4. The system could be developed by a catalog, circulation, or DBMS vendor and purchased and operated by a local library; the catalog would be a local catalog.

5. The system could be developed by the UW - Madison, University of Chicago, and IBM Corporation joint development project. The on-line catalog component of this project could be acquired and operated by UW - Madison, WLC, DPI/DLS, a system, or an individual library.

The first two options (1,2) are likely to be used for union catalog purposes, as a finding tool for interlibrary loan, and a collection development and retention tool; they would most likely not be used for patron access (except on a very limited local basis) due to the heavy terminal, communication lines, computer, and disk capacity limitations of the system.

The local catalog option (4), a local library on-line catalog, could be used as an on-line catalog for patron access, and permit the elimination of the card or book catalog.

The statewide version of option (3) probably falls in the union catalog category, and would not provide sufficient capacity to allow local libraries to eliminate their present catalog.

The area version of option (3) falls somewhere between the local on-line catalog (4) and the statewide union catalog (3) capabilities. If the number of patron terminals were not excessive, perhaps less than 200 (the possible capacity of a medium-sized system), the area system might be able to handle the on-line patron searching for a group of libraries. If the patron terminal requirements were higher than the capacity of the system, the area system would have to purchase additional systems (computers, files, etc.) or provide an area union catalog service without patron access.

4.3.1 System Capacity - A Note of Caution

A note of caution is in order here. When evaluating on-line catalog systems do not be misled by the capacity of the system measured in number of terminals. The statement "The system can support up to 255 terminals" (or 64, or any other number) may be referring to the maximum number of terminals that can physically be connected to the hardware, or that can logically be handled by the software. In most cases, this is not representative of the true capacity of the system. (This is similar to counting the number of electrical outlets in the home to determine the capacity of the household appliances; it is the capacity of the power lines in the house that determine the number and size of appliances that may be operated at the same time - not the number of outlets.)

In most on-line search systems the computer resources required to process the "255" simultaneous search requests, and the disk requirements to support these search requests are the actual system bottlenecks. A system capacity of 255 terminals may become saturated when 40 users are searching simultaneously; the actual capacity is, therefore, less than 40 terminals. The capacity of the system is determined by the design of the software and user interface, the file and record design, the speed of the computer and size of the memory, the disk access speed and the number of disk accesses to obtain the desired record, the efficiency of the operating system, timesharing monitor and terminal and disk input/output software, and a variety of additional considerations. It is not possible to evaluate all of these factors to determine the system capacity; the most effective way of determining the system capacity is to load a real bibliographic and holdings file of the same size as the final system into an on-line catalog system, attach a specific number of terminals ("n"), then have trained and untrained searchers perform simultaneous searches (by author, title, subject headings, etc.) as fast as possible and measure the response time.

If the resulting response time is below (better than) the acceptable threshold (less than 5 seconds for average load, or less than 10 seconds for peak load) the system capacity is at least "n" terminals under peak load conditions. If the response time is above (worse than) the accepted threshold, the system cannot handle a peak load of "n" terminals. This benchmark or acceptance test should be run as a LIVE FULL-LOAD test, not as a computer simulation; the terminals, lines, searchers, and search requests must be real.

4.4 SCHEDULES FOR ON-LINE CATALOGS

It is difficult to predict when various forms of on-line catalogs will become available, and, further, when they will be in wide-spread use. The circulation vendors may produce an on-line catalog for local or smaller area use in the 1981-1982 timeframe. The cataloging vendors may provide area distributed online catalogs in the 1982-1983 timeframe. Certain libraries which have been involved in extensive local on-line automation programs for many years are in the process of developing prototype on-line catalogs; it is doubtful that these systems will be easily transferred to another library. The on-line catalog portion of the UW - Madison research and development project has as a goal the transferability of the program to IBM computer systems at other libraries.

An exception to this schedule is the Washington Library Network (WLN) software which is available now under license for $300,000, and requires a relatively large IBM (or IBM-compatible) computer to support extensive patron searching. The cost of the hardware and operations makes the unit cost per patron terminal very expensive if the system is used exclusively for patron searching. The WLN system also provides acquisitions, cataloging, and authority files, and is more likely to be selected for these features; the capacity remaining for patron searches would be, therefore, diminished.

DBMS vendors may provide systems for single libraries in the 1982-1983 timeframe, and multi-library catalogs at the same time or somewhat later.

4.4.1 Conclusion

Standalone on-line catalogs are not available now and will not be available for several years. The best policy to pursue at this time is to plan for the eventual use of an on-line catalog and make effective use of interim products. The development of on-line catalog systems may well take longer than expected. It will take several years after development for most of the systems to come into widespread use in daily operations. The processes of planning, organizing, generation of funding, and actual installation, training, and availability for patron use will take several years (2-5 years depending on the number of libraries involved).

Two very valuable implementation activities should take place during this period:

1. generation of a statewide data base for the on-line catalog, and

2. generation of an interim COM (Computer Output Microfilm) catalog from the statewide data base.

The following two sections describe these activities in general terms, and Chapter 5 provides the details.

4.5 THE NEED FOR A DATA BASE

The two primary ingredients of an on-line catalog are the system (the hardware and software described in the preceding sections) and the data base. The data base for a local library contains the bibliographic and local holdings information for the single library; a system-wide data base contains data for all libraries in the system, and a statewide data base contains data for all libraries in the state.

The process of developing a local, area, or statewide data base is a complex, expensive, and time consuming activity.

Once the data base has been developed, it can be used for a wide variety of purposes; some of the multiple uses of the data base include the generation of a COM catalog, generation of a file to be used for the on-line catalog for a single library, a system, or the state, a resource file to aid other libraries in performing their retrospective conversion, and the generation of a file to be used for a single library or an area circulation system.

The investment in the development of a data base may be considered very expensive if it is used for only one of these purposes; as a foundation for all of these uses, it is a bargain.

4.6 THE COM CATALOG: AN INTERIM FINDING TOOL

The statewide COM catalog can be generated directly from the statewide data base and used as an interim finding tool to be used until the availability of the on-line catalog. For libraries which never choose to acquire (or participate in) an on-line catalog, the COM

catalog would become the permanent finding tool. The COM union catalog will provide a valuable and relatively inexpensive finding tool for material in Wisconsin libraries. The initial records in the early statewide data base will provide a more effective tool for locating library materials than any other finding tool available. The widespread availability of the COM catalog which can be reproduced for $300 - $350 per copy plus the one-time purchase of a COM reader brings the cost within the reach of a large number of Wisconsin libraries.

This widespread availability of a statewide COM union catalog during the development of the statewide data base (and prior to the availability of an on-line catalog) permits the early partial payoff of the costs of generating the statewide data base.

4.6.1 Forms of COM Catalogs

A COM catalog can be produced on roll microfilm or microfiche, or both. One roll of microfilm can contain up to 175,000 records (including full entries under the title, each author and subject heading), thus requiring multiple rolls and multiple readers for a full statewide catalog (6 readers for 1 million titles, 12 readers for 2 million titles). These readers cost approximately $800 - $1000 each. Microfiche readers are considerably cheaper, approximately $150 - $200 each, and only one reader is needed no matter how large the catalog. Because each fiche contains up to 1250 records, many pieces of fiche are required for a statewide catalog (830 fiche for 1 million titles, 1660 fiche for 2 million titles), although only one fiche reader is required regardless of the size of the file.

4.6.2 Choices of Forms and Cumulation Levels

Because of the problems and associated costs of re-filing and the mis-filing pieces of microfiche, roll film is preferred for general public use, particularly in situations where a microform catalog is the only catalog for a library. With a machine readable data base it is possible to keep each library's files merged on the statewide data base and to extract a catalog at any level. Thus, a catalog of all Wisconsin public libraries or a catalog of all libraries within a system could be produced. Each mix of formats can be created at nominal cost, so the form of the catalog could be determined based on area of use, size of the file, and local library variables. Thus, one library could have a

microfilm catalog of its own holdings, an area microfilm catalog, and a microfiche catalog of the statewide data base.

4.6.3 Backup to the On-line Catalog

Another major feature of the COM catalog is that it can serve as a backup to the future on-line catalog in those periods when the on-line catalog is unavailable due to hardware or software difficulties.

Chapter 5

DATA BASE

The creation of a machine readable data base is the most important, time-consuming, and expensive step in automating libraries. This data base must contain records in a universally accepted standard, which, for the United States today, is the MARC II Standard Communications Format. (This format consists of specific required information, called fields, with specific identifiers, called tags, arranged in a specific manner on a specified form on magnetic tape. The MARC II format should not be confused with records from the Library of Congress MARC data base which consists of records of materials cataloged by the Library of Congress and stored in the MARC II format. A record may be cataloged by anyone to MARC II standards. The term "MARC data base" generally refers to the 1,000,000 plus records cataloged by the Library of Congress in MARC II format.)

5.1 AVAILABLE MACHINE READABLE RECORDS

Although no cohesive plan for a Wisconsin bibliographic data base currently exists, there are, nevertheless, numerous machine readable bibliographic records available in Wisconsin libraries. These vary in complexity from brief entries to full bibliographic records in MARC II national format standards. Fortunately, even the briefest of these entries can be upgraded to national standards utilizing special computer programs and files. These national standard machine readable records should be used to form the basis of a statewide data base and union catalog. These records should come from four sources:

1. All currently available machine readable records no matter how brief or the purpose of the original conversion. These include, but are not limited to, OCLC cataloging records, UW - Madison Reserve Book Room records, and CLSI, Milwaukee Public Library, and other circulation records.

2. Records which will be converted in the future for any other local purpose such as circulation or cataloging. Records belong in this category if the local decision for conversion is based on the cost-effectiveness of the original application. In most cases it will be advantageous to convert the records for the statewide data base first and then use the data base records to create records for the cost-effective local application.

3. Retrospective conversion of holdings in specific libraries, or collections, or by date. A priority list should be created by the Wisconsin Statewide Automation Coordinating Committee (WSACC) (see Section 12.1) of those organizations holding unique materials which are or would be heavily used for ILL. It may be necessary to provide outside funding to convert records of materials needed statewide if the local jurisdiction is unable to fund conversion itself. The creation of this priority list will probably require statistically valid studies of the overlap in library holdings.

4. Future or on-going records from OCLC tapes and acquisition tapes as well as direct input.

Although, as described earlier, a statewide on-line catalog is not feasible at the present time, the machine readable data base created for an interim method is fully usable as an on-line file once an on-line catalog becomes feasible. In addition, due to anticipated computer malfunctions, a backup method will continue to be required in the future.

5.2 COM CATALOG

The most feasible current solution to providing holdings information statewide is a Computer Output Microform (COM) catalog. This catalog may be produced in either microfiche or microfilm or both. In addition to serving as a current substitute (and a future backup) for an on-line catalog, COM is more versatile in that inexpensive readers and self-contained operation mean that COM can be used in more areas than on-line terminals, such as smaller school libraries and non-library settings such as dormitories, factories, and shopping centers.

5.3 BUILDING THE DATA BASE

Over 2.5 million existing machine readable bibliographic records, representing an unknown number of unique titles, have been identified within the State of Wisconsin.

5.3.1 OCLC Catalog Records

Currently 54 libraries in Wisconsin are using OCLC (via WLC) for cataloging records and catalog cards. Machine readable records of materials cataloged are available at WLC, which has been ordering magnetic tapes for all of its libraries. These records are in MARC II format and contain OCLC identification numbers for easy detection of duplicate titles. There are approximately 1,800,000 records of materials cataloged. Through December 1979 there were 1,035,000 tape records: 381,000 for public libraries, 598,000 for the University of Wisconsin, and 56,000 for other academic libraries.

5.3.2 Milwaukee Public Library Circulation Records

Milwaukee Public Library has a data base of 920,000 bibliographic records generated for the Milwaukee Public Library circulation system. These records contain limited author and title information, plus complete location and holdings information for 13 libraries in the Milwaukee County Federated Library System. These records are not full bibliographic records.

5.3.3 UW - Madison Reserve Room Circulation Records

UW - Madison has a data base of 63,000 bibliographic records, for use in the UW - Madison Reserve Book Room circulation system. These records are not full bibliographic records.

5.3.4 CLSI Circulation Files

There is currently one turnkey automated circulation control system operating in an academic library - UW - Oshkosh. This system has a machine readable file of all or most of the titles at the UW - Oshkosh libraries. These files, however, are very brief and not suitable for data base use in their present form, especially as the records contain limited subject or added entry information. In addition, the degree of overlap of these files with the OCLC tapes is unknown.

5.3.5 Upgrading of Existing Records to MARC Format

In order to merge records of different institutions, to insure that future records will be compatible with old records, and to minimize costs by using existing vendors and software, it is necessary to convert all existing non-MARC-format records into MARC format. Using a computer and existing programs to do this is dramatically less expensive than converting the manual records to machine readable form again. The conversion of the Milwaukee Public Library circulation file is discussed in Section 5.3.5.2. The UW - Oshkosh CLSI disk files can be converted to magnetic tape and matched against a file containing the entire Library of Congress MARC cataloging file as well as the MARC format machine readable files of large academic libraries (using large academic library files because the CLSI system is at UW - Oshkosh and this file will result in a higher percentage of matches).

5.3.5.1 Upgrade Costs

One major COM vendor will do this upgrade step for $0.04 - $0.05 per record, with the cost dependent upon the total number of records processed. (All COM costs are approximate and are based on one vendor's standard prices in June, 1980.) At this point there is a separate charge for each duplicate record since, at this stage, all duplicates must be processed in order to be identified. The match is best accomplished by matching the Library of Congress Card Numbers (LCCN) of the non-MARC records against the LCCNs of the source file. An additional match of the main entry and title data is made at this time for verification purposes. (This is the reason it is recommended that the LCCN be included in all retrospective conversion, circulation, or other form of machine readable records. In fact the LCCN should always be recorded, even manually, on a shelf list or other official catalog at

every library; someday that LCCN will be required for matching purposes - see 5.6, 12.4.) Matches which are ambiguous or duplicates are identified and require library staff intervention for resolution. The original main entry and title can be displayed on successive COM editions until a match is identified at a later step or until a full upgrade is entered manually into the data base. The OCLC current and archival tapes would also be subject to a $0.04 - $0.05 processing charge.

Once all of the current non-MARC machine readable records are converted to MARC format, the files can be consolidated at an approximate cost of $0.02 - $0.05 per final unique title. This consolidates and merges location information for the same bibliographic record. Local call numbers can be retained in the statewide data base and displayed on the COM catalog, if desired.

5.3.5.2 Milwaukee Public Library Conversion

The Milwaukee Public Library data base should be matched against the LC MARC file; the remaining titles (which did not match) should be passed against data bases from other large public libraries that also act as area resources (in other states). For titles which still do not match any available vendor resource file (perhaps 20% to 40% of the original Milwaukee Public Library file), Milwaukee Public Library should proceed to perform retrospective conversion using the OCLC system.

The advantage of this procedure is the high labor cost avoided by performing 60% to 80% of the retrospective conversion by totally automated methods. The vendor charges for conversion would be approximately $0.05 per record (plus a one time cost for writing the computer program which will read the Milwaukee Public Library tape format); these costs are substantially lower than the manual labor cost of performing retrospective conversion on OCLC - even in light of the fact that OCLC retrospective conversion is one of the most cost effective methods of conversion. The fact that Milwaukee Public Library possesses a machine readable file with short bibliographic data and detailed holdings data provides the economic and technological opportunity to produce upgraded bibliographic records (for a large percentage of the records) at a minimum cost.

The disadvantage of this procedure for OCLC users is that 60% - 80% of the converted titles will not appear on the OCLC data base with Milwaukee Public Library holdings (but will appear on the statewide COM catalog).

5.4 PHASE I DATA BASE

The over 2.5 million machine readable records will likely represent somewhere between 1,250,000 and 1,800,000 unique titles. At this point, a COM output product can be created. A COM master is produced from the merged tape described above for $0.045 to $0.10 per record with copies at $0.14 - $0.20 per 1000 titles per copy.

5.5 ADDITIONS TO THE MACHINE READABLE FILES

Additional titles and holdings will be added to the statewide data base either through updating of the files with new records or retrospective conversion of older titles not in machine readable form.

5.5.1 Updating

At the present time the most viable sources of automatically generated full bibliographic new data to be added to the statewide data base are new OCLC tapes and machine readable tapes of acquisition information acquired from large book jobbers. Both the OCLC and book jobber tapes contain full bibliographic records in machine readable form; these additions to the data base would, therefore, not require upgrading. The costs of acquiring book jobber records is $.00 - $.15 per record and the cost of acquiring OCLC records is less than $.05 per record. The cost of adding these records to the data base would be $.07 - $.10 per unique title.

5.5.1.1 Acquisition Tapes

Some libraries order a majority of their books from one or more large book jobbers; many of these book jobbers offer an additional service which provides full bibliographic acquisition tapes for all material purchased by a particular library. The cost of this service varies from no charge (free) to $0.15 per title ordered, depending upon the size of the annual book order.

5.5.1.2 Other Methods

It is also possible to use a special Optical Character Recognition (OCR) typing element on an electric typewriter to type pertinent information (brief bibliographic data for matching purposes, and detailed holdings data) which is then converted to machine readable form by an OCR vendor's machine. Microcomputer terminals may also be used in a manner similar to OCR. LCCNs and OCLC numbers are used to match records in the master data base. This costs $0.05 per new title, with additional library locations free; once a title has been paid for, additional locations by the same or other libraries on the data base are free. It is not possible to use CLSI disk files for updating since there is, at present, no method of separating new additions (records added since a given date) from the old file, and it would be necessary to repeat the upgrading procedures for every CLSI title in each updating cycle.

5.6 RETROSPECTIVE CONVERSION

It will be necessary to add holdings and titles of already-acquired material if the statewide data base is to be most useful. The choice of which holdings and titles to convert has been discussed earlier; methods of this conversion will be discussed here. Each of these methods is, to some extent, dependent upon matching the record to be converted to the record on the existing statewide data base or a source file. Although not printed in older materials, the most readily available field for matching is the Library of Congress Card Number (LCCN). The International Standard Bibliographic Number (ISBN) tends to be somewhat more accurate than LCCNs printed in books, but ISBNs are not available for older material.

> Every library, regardless of size or retrospective conversion priority, should immediately begin to note LCCNs and/or ISBNs on all of the new or revised manual records of the library collection, preferably as part of the shelf list.

5.6.1 OCLC Retrospective Conversion

The current rate structure of OCLC encourages the use of OCLC for retrospective conversion during certain times of the day. Machine readable records for the converting libraries are available on magnetic tape, but no cards are produced. The unused time on the existing terminals at the 54 OCLC libraries could be utilized for this purpose, or new terminals could be purchased (or borrowed) and installed for the period of retrospective conversion at libraries with a high priority for conversion. (see Sections 7.1.3 and 7.1.3.1 for more information)

5.6.2 OCR and Related Technology

An Optical Character Recognition typing element on an electric typewriter can be used to type matching information (LCCN, main entry, title) and local information (call number and location statement) for each title to be converted. A vendor's OCR reader translates the OCR typing to a machine readable tape and a procedure similar to that of upgrading records is begun. Because OCR is prone to errors, particularly if the typewriter is not in perfect alignment or if the typist must make many corrections, some vendors are investigating the use of terminals with built-in microcomputers to replace OCR. Small, inexpensive microcomputer terminals with a magnetic diskette are programmed to accept the needed information and transfer it to the diskette. The diskette may be mailed, or the information on the diskette may be transmitted by telephone, to the vendor to begin the matching process. Once the technique is developed, the Department of Public Instruction/Division for Library Services could purchase several microcomputer terminals and loan them to various libraries for the conversion period. (It is possible that rental of the microcomputer terminals may be offered by the vendors.)

5.6.3 Book Jobbers

Some book jobbers, particularly those used by academic libraries, have available machine readable records of previous purchases which can be provided with or without full bibliographic information. This is a particularly valuable source of records for non-OCLC libraries.

5.6.4 Manual Matching

It is also possible to manually match titles held by a library against the microform product of the statewide data base. Each record in the statewide data base would have a unique identification number with a check digit. The converting library would record these numbers for matches; if necessary, OCR or microcomputer input could be accomplished at a central site from worksheets. Non-matches could be saved for a later attempt at a match, or a full bibliographic entry could be created using one of the above methods. This method is labor intensive, but may be appropriate for smaller libraries. The input process can be accomplished over many months; some libraries have successfully used volunteers for the clear-cut cases (using an exception system whereby the questionable matches are referred to library staff). A microcomputer terminal at a central site could serve as the actual input device for many smaller libraries.

5.7 ADDITIONAL USES FOR THE DATA BASE

The proposed data base will have full bibliographic information for each title. This information is only collected, keyed, and stored once and is analogous to a unit card in a card catalog. However, every piece of information in the record is not needed for every application. Just as a circulation record can be expanded to full MARC format, so can sufficient data be extracted from a MARC record to create another library's circulation file. These full records can also be used to completely replace a card or book catalog in an individual library, by building a machine reacable file from records converted by another library. In both of these cases possible local cataloging variations must either be maintained as part of the statewide data base or modified by the local library before local use.

This data base, however, is not useful as a cataloging tool to produce cards, in most instances. There is not only a time lag before publication of the data base, but the microform format is not easily converted to 3 X 5 form except with extra equipment. The data base may be used as a source of bibliographic information, but should not be thought of as a major cataloging tool.

5.7.1 Conversion to a COM Catalog

Once a library has full bibliographic and holdings records for the entire collection on a COM catalog, it is a reasonable step for the library to take to make the COM catalog the official catalog of the library and eliminate the card catalog. The trade-offs to be made include the cost and operational schedule of the COM catalog master and copies, the cost of updating the catalog, and the cost of microfilm and/or microfiche readers, versus the current cost and operational schedule of obtaining catalog cards, filing, storage, etc.

Some of the COM catalog vendors provide authority files and authority control services for the libraries; many libraries have used this opportunity to convert to LC authority files, then eliminated their card catalogs, and use the COM catalog as the patron catalog. These vendors are also prepared to convert to AACR2 authority files. This could be done automatically to a library's file and the next edition of the COM catalog would have the new AACR2 terms in place of the old AACR terms, as indicated on Library of Congress authority tapes. The conversion of a library's catalog from AACR to AACR2 without the need for any appreciable library staff time is another major benefit of automation and a statewide data base.

PART III

CURRENT PLANS AND FUTURE SYSTEMS

The current automation activities of Wisconsin libraries, and the need for a statewide data base as a resource file for the generation of area and statewide COM catalogs, circulation files, and on-line catalogs were described in Part II.

Part III describes the current automation plans of some Wisconsin libraries to acquire new systems or expand the use of present systems. Recommendations for the acquisition of new systems are included, as are recommendations for improved use of existing cataloging, circulation, acquisition, serials, and search services.

Chapter 6

CIRCULATION SYSTEMS

6.1 CURRENT PLANS

Several libraries are planning to acquire circulation systems for their own library or for an area consortium. L. E. Phillips Memorial Public Library and a consortium of academic libraries including UW - Stout are performing detailed planning and have begun writing Requests For Proposals (RFP) for circulation systems; Racine County and Arrowhead Library Systems, Madison, Waukesha, LaCrosse, and Appleton public libraries and others are in various stages of planning, budgeting, and vendor selection. UW - Madison is in the process of developing an on-line circulation system for the Madison Campus Library System. This system will replace the current automated circulation system in the UW - Madison Reserve Book Room. Over the next several years many additional libraries and systems will be in the position of selecting a circulation system.

This chapter presents a selection process which Wisconsin libraries should follow in order to improve the probability that the system selected will indeed meet their needs. When a formal selection process, such as the one presented in this chapter, is not followed, the library or consortium often obtains and installs a system which, after several months of operation, is found to be inadequate. In an attempt to prevent this situation from occurring in Wisconsin libraries, specific procedures are recommended, cautions are offered, and a proven sequence of activities is described.

6.2 SELECTION CONSIDERATIONS

The selection of a circulation system is one of the most critical decisions a library can make. The system, as delivered by the vendor, could cost in the range of $125,000 to $750,000. In many cases the purchase price may not be the major cost of the system; the cost of retrospective conversion to create the circulation file, and the on-

going operational costs of staff labor, telephone line charges, and maintenance could each exceed the purchase price of the system.

6.2.1 Missing Features or Services

In many cases the vendor's system does not provide all of the features and the capacity that the library requires; many current users of circulation systems have found themselves in the position of expecting certain features of a system to be available "soon" after they purchased their system, only to find from later experience that the feature or service is years away. The library may be in a difficult position if the missing service was critical to its operation, and the vendor's commitment to supply this service was used as a basis for selecting a particular vendor.

6.2.2 Inadequate Capacity

Another very serious problem that libraries have experienced with automated circulation systems is the lack of adequate system capacity to perform the required library functions at the level of activity required by the library. When this occurs, the system is overloaded; the operational capacity of the system has been exceeded and the effect on the user is slower and slower response time. When the response time becomes so slow that the library cannot get its work done, the library is faced with the choice of abandoning the system or purchasing additional hardware (terminals, disks, etc.) or a larger computer; in most cases the latter choice is selected, and new unexpected costs are incurred.

This addition of new equipment or upgrade of existing equipment due to inadequate capacity occurs in a large percentage of the existing installations, with various vendors' systems. In some cases, the library has underestimated the number of titles, patrons, circulation load, etc., or has expanded the use of the system by adding previously unplanned libraries or functions on the system; in these cases the library has been responsible for exceeding the capacity of the system, and therefore responsible for the extra cost.

The situation to avoid is the one beyond the library's control where the library has clearly stated the functions required (check-in, check-out, holds, fines, etc.), the activity on the system (1.5 million

checkouts, 10,000 fines, 20,000 new or changed patron records, 15,000 new titles per year, etc.), the response time required (2-5 seconds to checkout, 5-10 seconds to search, 5-6 seconds to add a new title, etc.), and the vendor guarantees that the system, with the configuration and cost proposed by the vendor can meet these requirements -- and it doesn't. This has occurred all too often in unsuspecting and unprepared libraries in other states, and is most likely to occur in automated circulation systems where there will be a high transaction volume, such as a very large library or a large circulation system shared by several libraries. (See Section 4.3.1.) Benchmark and acceptance tests must be required in order to prevent this situation from occurring in Wisconsin installations.

The resulting additional cost to upgrade the system, plus the additional staff time required to deal with the slow response time, can be avoided if the system requirements are adequately defined and the vendor is required to prove that the proposed system can handle the expected load. This should be accomplished prior to the acceptance of the system by the library and prior to any monies paid to the vendor; this can be accomplished as part of a benchmark test and is defined in the following sections.

6.3 THE SELECTION PROCESS

The selection process described in the following sections should be used for the purchase of any turnkey system (where the equipment is owned by and will reside in a library or its data processing center); in a turnkey system, the vendor has designed the system, written the software, installed the system, and trained the library staff. Circulation systems fall in this category; on-line catalogs, when they are available, will also fall in this category.

The process is accomplished in a series of steps, each step building on the results of the previous steps.

6.3.1 Transaction Volume

The library or consortium requirements are defined in terms of unique titles, volumes, patrons, circulation transactions (checkout, check-in), fines, holds, recalls, reserves, etc. The annual volumes and/or changes to these figures are determined (new titles, discards, patron changes,

new patrons, new volumes, etc.). Much of this data can be derived from the library's annual statistical report. When libraries are to share a system, extreme care should be taken in cumulating the total transaction load for all libraries which will use the system.

6.3.2 Locations

The number of automated circulation locations at each library and branch is defined, taking into account the number of exits, book drops, etc. The library should determine the approximate transaction load that occurs at each location and the hours each location is in operation.

6.3.3 Average Hourly Load

The average hourly transaction mix is then calculated by dividing the annual transaction data (e.g., 2 million checkouts, 10,000 new titles, etc.) by the annual hours of operation for a particular transaction type (60 hours per week x 52 weeks per year = 3120 hours per year for circulation, 20 hours per week x 48 weeks per year = 960 hours per year for material updates, etc.) to determine the average hourly transaction rate (2,000,000 checkouts/3120 hours = 641 checkouts per hour, 10,000 titles/960 hours = 10.4 new titles per hour). Average hourly transaction rates should also be calculated for item searches, patron searches, title searches, subject searches, fines paid, reserves placed, holds placed, etc.

6.3.4 Peak Load

Given the average hourly load calculated above, an estimate must be made of the peak load. The peak load may occur at a specific time in the evening at a public library, or the week before finals at an academic library. The peak load is generally from 2 to 10 times the average load (except for very small average loads where the peak load can be a much higher percentage). It is difficult to estimate the peak load; the library staff should attempt to make the best estimate possible. It may be possible to measure or count the peak load by observations. In the case of defining the requirements, it is better to estimate on the high side rather than the low side.

6.3.5 Write the RFP

The next step is to write a Request for Proposal (RFP). The RFP should describe all of the features and services the library requires of the system; each feature/service should be designated as mandatory, essential, desirable, or useful (or any other set of terms which will be defined by the library). There are many excellent RFPs which have been developed by other libraries, and can be used as models; a clearinghouse of sample RFPs should be established by the Department of Public Instruction/Division for Library Services. An example of a circulation system RFP covering all of these subjects in detail is the "State of Wyoming, Department of Administration and Fiscal Control, Request for Proposal Number 0606-J". Copies of this RFP may be obtained from the Wisconsin Department of Public Instruction/Division for Library Services (DPI/DLS). This sample RFP is one of the few RFPs that defines the use of a single system to be shared by multiple libraries and multi-type libraries; consideration is also given to the interface between the circulation system and other systems (OCLC cataloging, COM, and other circulation systems), transaction mix and response time tables, benchmark and acceptance testing, etc.

It is vital for the library or consortium to produce a formal written RFP; the use of questionnaires, interview forms, and telephone or personal conversations is not sufficient to select the vendor of a major system. The principal purpose of an RFP is to obtain formal written proposals from several vendors; these proposals describe the vendor's product in terms the library should understand.

6.3.5.1 Transaction Mix

Included in the RFP should be a listing of the per hour average and peak load requirements for each type of transaction to be performed by the system (check-ins, holds, searches, new titles, etc.). This is a very important part of the RFP. Without this table the vendor and the library do not have sufficient information to determine, prior to system installation and actual operation, whether the system will handle the library's load. With this table, the library will be able to test the vendor's product prior to acceptance of the system and payments to the vendor. (see the Transaction Mix Table below.)

TABLE 1

Example of Transaction Mix Table

Transaction Type	Average Load (per hour)	Peak Load (per hour)	Remarks
Checkouts	1425.	3800.	
New Titles added	6.	20.	
Title searches	100.	10.	(Willing to limit or postpone searches by library staff for 30 minutes during peak load, IF peak load is less than 30 minutes per half day.)
(etc.)			

6.3.5.2 **Response Time**

The RFP should also include the response time requirements for each type of transaction, for both average and peak load (e.g., searching: 5 seconds for the average load and 10 seconds for the peak load, and check-out or check-in: 2 seconds for the average load and 5 seconds for peak load, etc.)

The Response Time Table for average and peak load response time is tied to the average and peak load conditions defined in the Transaction Mix Table described above; the actual conditions (transaction mix) during a particular time period (e.g., 30 minutes) determine whether the system is under average or peak load conditions. ONCE THAT HAS BEEN DETERMINED, the appropriate response time table (average or peak) is used to compare with the actual system measurements of response time in order to judge the systems performance. (see the Response Time Table below.)

TABLE 2

Response Time Table

Transaction Type	Average Load Response Time (seconds)	Peak Load Response Time (seconds)
Check-in	1.5	4.5
Checkout	1.5	5.0
Title search	3.5	10.0
Add new title	5.0	12.0
Add new patron	3.0	5.0
Revise patron record	2.5	4.0
(etc.)		

6.3.5.3 Interfaces with Other Systems

The circulation system should be able to interface with other circulation systems in the state. Interfacing with another system by the same vendor may not be very difficult; interfaces with different vendors will be difficult. The RFP should define the vendors already in the state and strongly encourage the selected vendor to demonstrate the on-line interface, including the ability to search and initiate an ILL transaction. Vendors may be reluctant to provide this type of interface due to the complexity of the development and their perception of the impact on their market share if the interface were available. If the libraries insist on the interface, and withhold substantial payment until the interface is available (or disqualify a vendor who will not provide the interface), the vendors may be encouraged to develop the necessary interfaces.

There is a similar need to require an interface between the circulation system and the major acquisition (book jobbers), COM, and retrospective conversion vendors. In a few years there will be a need for an interface with on-line catalog vendors. The circulation vendors should be encouraged to develop these interfaces with the major vendors of these services.

6.3.6 Evaluate the Proposals

The vendors tend to portray their product in the most favorable light. This is quite reasonable; unfortunately, some vendors also tend to exaggerate the functions of the product, write the text in such a manner that it is difficult to determine whether something is available now or will be available someday, and omit the product or service deficiencies.

The RFP can tend to reduce some of this confusion by providing precise definitions of status terms such as "operational", "in testing", "in development", "in planning", and requiring the vendor to use these terms in the proposals. (See Section 2.2 of the sample RFP.) Detailed telephone interviews with several current users of each vendor's product will likely uncover some of the major advantages and disadvantages of each product. The use of a formal RFP will let the vendors know that they are in a competitive situation; the vendors are much more likely to minimize their prices and agree to user provisions in the RFP in a competitive situation. This factor alone justifies the effort of producing a formal RFP.

The vendors' proposals should be reviewed, evaluated against a predetermined set of weighed evaluation criteria (users should be contacted as part of the evaluation process), and a vendor selected.

6.3.7 Additional Considerations

When evaluating proposals from different vendors, consideration should be given to other existing circulation systems in the state; there is a CLSI system in operation at UW - Oshkosh and locally developed systems at UW - Madison (Reserve Book Room), UW - Green Bay, and Milwaukee Public Library. For ILL purposes it will be easier to communicate among systems of the same vendor than among systems of different vendors (which may remain incompatible for several years). The same is true of obtaining a copy of another library's title file from their circulation system for retrospective conversion purposes - it will tend to be easier to copy and use a file from the same vendor's system.

This recommendation should not be interpreted as a recommendation for vendor conformity; there are many other independent factors to consider which include system features, initial and on-going operating costs, level of performance for the projected workload, satisfactory benchmark

testing, existing users' evaluation of vendor and system capabilities and performance.

The experiences of the CLSI, GEAC, Dataphase, and Cincinnati Electronics users and users of other systems in Wisconsin and other states should be carefully reviewed; more information and measurement data will be available from some of the newer library installations in approximately one year.

6.3.8 Benchmark Test

The RFP should also define the acceptance criteria for the system, including benchmark and acceptance testing. After the library has reviewed the various vendor proposals and has selected a single vendor, the vendor, at the vendor's expense, must perform a benchmark test on existing equipment at the vendor's site or an existing user's site. The purpose of a benchmark test is to prove that a vendor's system can CURRENTLY meet the the functions and performance requirements as defined by the library testing the system.

The vendor will perform these types of tests on two different occasions (Benchmark and Acceptance Tests), and under two different sets of testing conditions (initially on the vendor's or another user's site, and finally on the evaluating/testing library's own site). During both the benchmark and acceptance tests the vendor must accomplish two things:

1. The vendor must demonstrate (by using a live on-line system) that the FUNCTIONS available with the system meet the functional requirements as defined by the testing library in the RFP; how well does the system perform check-in, check-out, various types of searching, adding new records in batch and on-line, modifying existing records on-line, fines, holds, reserves, reserve room checkouts, etc.?

2. The vendor must prove that the system can handle the PERFORMANCE requirements established by the library; this is accomplished by conducting a live on-line full-load performance test of the system - by creating the on-line transaction load and transaction mix defined in the testing library's RFP. The vendor must run both the average hourly load and later the peak load transaction mix. During both portions of the performance test (average and peak loads) the library will measure the response time of all

6.3.6 Evaluate the Proposals

The vendors tend to portray their product in the most favorable light. This is quite reasonable; unfortunately, some vendors also tend to exaggerate the functions of the product, write the text in such a manner that it is difficult to determine whether something is available now or will be available someday, and omit the product or service deficiencies.

The RFP can tend to reduce some of this confusion by providing precise definitions of status terms such as "operational", "in testing", "in development", "in planning", and requiring the vendor to use these terms in the proposals. (See Section 2.2 of the sample RFP.) Detailed telephone interviews with several current users of each vendor's product will likely uncover some of the major advantages and disadvantages of each product. The use of a formal RFP will let the vendors know that they are in a competitive situation; the vendors are much more likely to minimize their prices and agree to user provisions in the RFP in a competitive situation. This factor alone justifies the effort of producing a formal RFP.

The vendors' proposals should be reviewed, evaluated against a pre-determined set of weighed evaluation criteria (users should be contacted as part of the evaluation process), and a vendor selected.

6.3.7 Additional Considerations

When evaluating proposals from different vendors, consideration should be given to other existing circulation systems in the state; there is a CLSI system in operation at UW - Oshkosh and locally developed systems at UW - Madison (Reserve Book Room), UW - Green Bay, and Milwaukee Public Library. For ILL purposes it will be easier to communicate among systems of the same vendor than among systems of different vendors (which may remain incompatible for several years). The same is true of obtaining a copy of another library's title file from their circulation system for retrospective conversion purposes - it will tend to be easier to copy and use a file from the same vendor's system.

This recommendation should not be interpreted as a recommendation for vendor conformity; there are many other independent factors to consider which include system features, initial and on-going operating costs, level of performance for the projected workload, satisfactory benchmark

testing, existing users' evaluation of vendor and system capabilities and performance.

The experiences of the CLSI, GEAC, Dataphase, and Cincinnati Electronics users and users of other systems in Wisconsin and other states should be carefully reviewed; more information and measurement data will be available from some of the newer library installations in approximately one year.

6.3.8 Benchmark Test

The RFP should also define the acceptance criteria for the system, including benchmark and acceptance testing. After the library has reviewed the various vendor proposals and has selected a single vendor, the vendor, at the vendor's expense, must perform a benchmark test on existing equipment at the vendor's site or an existing user's site. The purpose of a benchmark test is to prove that a vendor's system can CURRENTLY meet the the functions and performance requirements as defined by the library testing the system.

The vendor will perform these types of tests on two different occasions (Benchmark and Acceptance Tests), and under two different sets of testing conditions (initially on the vendor's or another user's site, and finally on the evaluating/testing library's own site). During both the benchmark and acceptance tests the vendor must accomplish two things:

1. The vendor must demonstrate (by using a live on-line system) that the FUNCTIONS available with the system meet the functional requirements as defined by the testing library in the RFP; how well does the system perform check-in, check-out, various types of searching, adding new records in batch and on-line, modifying existing records on-line, fines, holds, reserves, reserve room checkouts, etc.?

2. The vendor must prove that the system can handle the PERFORMANCE requirements established by the library; this is accomplished by conducting a live on-line full-load performance test of the system - by creating the on-line transaction load and transaction mix defined in the testing library's RFP. The vendor must run both the average hourly load and later the peak load transaction mix. During both portions of the performance test (average and peak loads) the library will measure the response time of all

types of transactions. The comparison between the manually measured response time from the performance test and the response time table from the RFP will determine the success or the (relative) failure of the performance portion of the test.

The first test to be run is the benchmark test. During the benchmark test the vendor must prove that the functions and conditions stated in the RFP and the vendor's proposal are real, the system currently exists (in hardware and software instead of on paper or in the vendor's future plans), and the system can immediately meet the functional and performance requirements defined in the RFP. Since the library at this stage of vendor evaluation does not have its own equipment, the benchmark test must be performed on the vendor's equipment at the vendor's site, or on a current user's equipment at a current user's site. If the test is held at a user (or host library) site, the test should be conducted during off hours (e.g., Sunday or holiday). It may be possible for the testing library to pay for the overtime use of the host library staff in order to make best use of trained staff (and reduce some of the travel budget). The use of an extra copy of the host library's (or some other library's) file may be necessary for the benchmark test.

(The second test to be run is the acceptance test. The vendor must again prove the FUNCTIONAL and PERFORMANCE requirements described above, but this time the test is conducted on the testing library's own recently installed equipment and hopefully the testing library's own converted circulation files. This is described in Section 6.3.11.)

For the benchmark test the vendor should load title, item, and patron files equal to or greater than the operational file size of the library to be tested. Sufficient terminals, patron cards, books, etc., should be available to conduct the test. At some convenient time when the host system (at the library or vendor site) is available for testing for a period of a few hours, the staff from the testing library, vendor staff, and possibly staff from the host library, should perform the live on-line benchmark test by checking in, checking out, adding patrons and titles, performing searches, placing holds, processing fines, etc., according to the average transaction mix table. If the average hourly transaction load cannot be processed in one hour, the proposed configuration and system proposed by the vendor will not be adequate for the library; at this point, the library could request the vendor to upgrade the proposed configuration and revise the cost estimate, or be disqualified. The same test should be conducted for the peak load, with the same consequences of successful or unsuccessful test results.

Benchmark testing is the only real link between the requirements of the user and the system proposed by the vendor. The vendor translates the user's requirements and functional specifications into an actual hardware and software configuration. The user must independently determine that the hardware and software proposed will fit his requirements BEFORE the user invests heavily in site preparation, file conversion and bar code labeling, staff training, and any direct payments to the vendor. If the user installs the proposed configuration without a benchmark test and the system cannot meet the user's workloads, it is the user, not the vendor, who must pay for additional equipment. Although vendors do not encourage benchmark testing, it is the only way to be certain that all of the bid responses fulfill the requirements, and it is a common practice in non-library data processing. (For a discussion of theoretical versus actual system capacity, see Section 4.3.1 "System Capacity - A Note of Caution".)

6.3.9 Acceptance Test - Contract Provision

After successful benchmark testing at average and peak loading, the library should proceed with contract negotiations, with the understanding, as part of the contract, that the vendor still must pass an acceptance test before the system will be accepted and any monies paid to the vendor. Remember, the library, not the vendor, defines "acceptance".

6.3.10 Contracts With The Vendor

In most cases, the vendor will offer a "standard" contract for the library to sign. Don't. The vendors contract is written for the advantage of the vendor. Carefully read the vendor's contract, define what is to be added, changed, or deleted, and present the ideas to your own legal counsel. Be sure that the contract clearly states that the system to be installed must meet the functional and performance requirements as stated in the RFP; it is also quite important to make the library's RFP and the vendor's proposal a part of the contract.

Remember, the library is buying a CAPABILITY, as defined by the FUNCTIONAL and PERFORMANCE requirements stated in the RFP, and NOT "a cpu Model XYZ and two disk drives Model ABC". The hardware and software are merely the system the vendor is supplying to meet the library's requirements. The contract should state this in the context described.

If the requirements are not met, the contract is void and the vendor must remove the equipment. (In most vendor standard contracts the vendors have met their obligations, and expect the full payment or a large percentage of the full payment, when they deliver and install the defined hardware and software - whether the library's requirements have been met or not.) Avoid phrases such as "This Agreement is construed pursuant to the laws of the state of _____ and constitutes the entire understanding of the parties hereto and supersedes any and all prior oral or written commitments, understandings, agreements or communications with respect to or related to the subject matter of this Agreement." The preceeding statement would allow the vendor to legally ignore all of the requirements stated in the RFP and the vendor's proposal; the library would certainly not benefit from this type of action. One solution to this situation is to change the sentence to read "This agreement, plus the RFP (dated _____) and the vendor's proposal (dated _____) which are considered part of this Agreement, construed pursuant...." Make the necessary revisions to the contract prior to signing the contract. There is an excellent primer on contracts with vendors, including many practical examples, called "The Joy of Contracts" written by Kevin Hegarty, Director of the Tacoma Public Library. This document is also available from the Wisconsin Department of Public Instruction/Division for Library Services.

6.3.11 Acceptance Test

An acceptance-test insures that the configuration installed by the vendor fully meets the user's functional and performance requirements. Acceptance testing occurs on new equipment installed in the testing library's facility; this is the equipment and configuration that the library will purchase and own once the library has accepted the system and paid the vendor. Prior to the installation of this equipment, the testing library should have converted all or a major portion of its title, item, and patron files. See Chapter 5 for a description of retrospective conversion methods.

The library should load its own files, set up its own tables for locations, security codes, holidays, patron types, loan periods, fine structures, etc. If the owner of the new system is a consortium, the tables should include separate title, item, and patron files for each library, as well as separate tables.

After installation of all of the central host equipment, terminals, and communications equipment at all or a portion of the library

locations, the library should load its own files and conduct the live acceptance test. If the files are not complete, the library should load dummy data from another library; the file sizes in the acceptance test should be equal to or greater than the size of the ultimate operational files. The acceptance test is similar to the benchmark test, except that the equipment is installed in the testing library; the files are its own, the books, patron cards, etc., are also its own. All functions and services of the system should be tested as well as the performance. The consequences of successful/unsuccessful testing are the same as in the benchmark test. The system is not accepted or any payments made until the average and peak load tests are successful. If the vendor cannot meet these requirements, the vendor must remove all the equipment at no cost to the library, and the library is free to select another vendor.

The rigid constraints on the acceptance are critical for the library. Once the system is accepted and the vendor has been paid, the library has very little leverage to influence the vendor, and remind the vendor of verbal, written, and proposal commitments. The library is much better off to test the full system on its own hardware installation and assume that any future system improvements are enhancements which should not be critical to the current operation of the system.

6.4 RECOMMENDATIONS FOR CIRCULATION SYSTEMS

6.4.1 Existing Systems - CLSI

There are several changes and new procedures that can be adopted by the libraries with automated circulation systems.

6.4.1.1 On-Line Interface to Cataloging Systems

Libraries with both CLSI circulation systems and OCLC cataloging systems, such as UW - Oshkosh, should investigate the on-line interface products which connect the two systems; these products read the bibliographic and holdings information from the OCLC terminal and transfer the data to the CLSI circulation files. These products are in the $15,000 range and eliminate the need for library staff to rekey the data in the CLSI system. Greenwich Public Library in Connecticut and

the California State University at Sacramento are early users of this interface product and should be contacted by any library considering this purchase.

When there is enough of a market, the vendors may build an interface from RLG/RLIN (or WLN) to CLSI, and possibly to other circulation vendors such as Dataphase, GEAC, etc. The only two current interface vendors are Innovative Interfaces Inc., Berkeley, California, and TPS Electronics, Palo Alto, California.

6.4.1.2 On-Line Interlibrary Loan

When there are two or more systems in the state using CLSI (or any other system), the libraries should consider adding the dialup feature to their systems where it does not currently exist and expanding the use of the interlibrary loan capability of the circulation system. This capability will become much more valuable with the generation and distribution of the statewide data base on COM.

6.4.1.3 Circulation to Catalog File Conversion

As part of the statewide data base activities, the Department of Public Instruction/Division for Library Services should obtain a statewide contract from a conversion or COM vendor to convert the Wisconsin CLSI circulation files into full bibliographic records (only UW - Oshkosh at the present time). When Wisconsin libraries have installed Dataphase, GEAC, System Controls, Cincinnati Electronics or other circulation vendors, the same procedure should be followed.

6.5 UW - MADISON CIRCULATION SYSTEM

The University of Wisconsin - Madison campus operates a locally developed on-line circulation system for its 63,000 title Reserve Book Room collection. The system circulates approximately 250,000 books per year. The system has recently been converted to the use of bar code labels and light pen wand readers in preparation for an on-line system. The circulation data is collected on-line and the files are updated in batch mode overnight; an updated computer listing is delivered on a daily basis for staff use.

6.5.1 Current Research and Development Activity

The UW - Madison Memorial Library and the Administrative Data Processing Center are participating in a joint research and development project with the University of Chicago and IBM. The purpose of this project is to develop an automated circulation system and an on-line catalog. The circulation system is expected to be operational for the Memorial, College, and Reserve Book Room collections, representing 40% of the total Madison Campus circulation, by January 1982.

6.6 MILWAUKEE PUBLIC LIBRARY CIRCULATION SYSTEM

The Milwaukee Public Library circulation system is the largest automated circulation system in Wisconsin and one of the largest systems in the U.S. The Milwaukee Public Library system circulates 4,500,000 books and other library material per year, accounting for over 91% of the total statewide automated circulation activity. The Milwaukee Public Library system was developed by Milwaukee Public Library and Checkpoint-Plessey Ltd., the circulation vendor. The system is operated for the 13 libraries of the Milwaukee County Federated Library System.

6.6.1 Bibliographic Files

There are 920,000 bibliographic records in the Milwaukee Public Library circulation system, making the Milwaukee Public Library file the largest single machine readable bibliographic file in the state. The Milwaukee Public Library records contain slightly limited author and title entries (80 characters each), the OCLC record number if the title has been cataloged on OCLC, a unique Milwaukee Public Library title number, location, call number, copy, publication, and language information. The record does not contain the Library of Congress Card Number (LCCN).

6.6.2 Upgrade Of Milwaukee Public Library Records

Only 6% of the Milwaukee Public Library records are on OCLC (59,000 records); the remaining 94% (861,000) are only available on the Milwaukee Public Library circulation files and the Milwaukee Public Library brief record COM catalog. It is critical to include the

additional 861,000 records in the statewide data base by upgrading these records to full bibliographic records. The most effective method of performing this is to provide the entire Milwaukee Public Library tape to the statewide data base and COM vendor for upgrade. By processing the OCLC tapes first, the vendor will not need to upgrade the 59,000 OCLC/Milwaukee Public Library records.

The vendor would match the author and title information with the LC MARC file. For titles which did not match the Milwaukee Public Library file (approximately 20% - 40% of the Milwaukee Public Library file) the vendor would match against other major public library files and perhaps finally an academic library file for the remaining titles. The vendor would copy the bibliographic record from the resource file (LC MARC, other library file, etc.) and add the Milwaukee Public Library holdings, call number, title number, etc. to the record. For titles still not found, Milwaukee Public Library should proceed by performing retrospective conversion on OCLC. Since the vendor matching activity costs approximately $0.05 per record, it is less expensive for the vendor to try and find an LC MARC or other resource library's record than to spend library labor to search OCLC and pay the OCLC fee for retrospective conversion and the OCLC tape records for the hits.

6.7 POSSIBLE LOCAL DEVELOPMENT OF AN AUTOMATED CIRCULATION SYSTEM

The commercial circulation system vendors have each spent millions of dollars developing the software for exceedingly complex library operations. These high development costs have been spread among many purchasers, each of whom is able to modify the commercial system to its own needs through the use of option tables. In view of these costs, the complexity of the computer programs, and the high response time requirements, libraries should not consider developing their own automated circulation system, either in-house or under an individual development contract, if an available commercial automated circulation system will meet most of their needs.

Chapter 7

BIBLIOGRAPHIC UTILITIES, BROKERS, VENDORS, AND CONSORTIA

7.1 OCLC

7.1.1 Current Status

OCLC as a bibliographic utility is supplying a major portion of the cataloging for Wisconsin libraries with over 600,000 titles cataloged each year using the OCLC system. OCLC/MARC tapes are being sent to WLC for these libraries. WLC has recently received the remaining OCLC archival tapes; tape records of all titles cataloged on OCLC by Wisconsin libraries are now available at WLC. The OCLC/ILL system is expanding month by month as libraries are turning to OCLC for processing and transmitting their ILL requests, although Wisconsin libraries do not appear to be using the OCLC/ILL subsystem heavily at this time.

7.1.2 Recommendations for Statewide Use of OCLC

1. Statewide procedures for ILL, including the Wisconsin Interlibrary Loan Guidelines, should be revised to account for the increasing availability of holdings information on the OCLC files.

2. One library or system headquarters in each system should coordinate ILL location information or requests on behalf of non-OCLC libraries in that system.

3. Libraries with sufficient funding to support on-going operational OCLC costs should be encouraged to join OCLC, assuming their long-term costs and benefits favor OCLC. High priority individual libraries, such as public or academic libraries in systems where there is no OCLC support, should receive startup costs (approximately $5000 each) to cover training, profiling, and one terminal.

4. Libraries, systems, and school districts in different areas should be encouraged to set up OCLC processing centers to provide services for other libraries, similar to the services provided by the State Agency Library Processing Center and Arrowhead, Racine County, and Southwest Wisconsin library sytems, if it can be shown that the annual on-going operational costs can be supported by the participating libraries. If state funding is available, the startup costs of $5000 (approximately) for a terminal, profiles, training, etc., should be offered to establish this service.

5. There should be at least one OCLC terminal in each public library system; if there are no OCLC terminals in a system, special financial support should be provided for the system headquarters or one library in the system to join OCLC and obtain a terminal. If terminals are not available in each system, the alternative is to route ILL requests to the Reference and Loan Library for OCLC searching which would add more work and time delays. ILL is best served library to library, when locations are known.

   a) COST ESTIMATE: $5000 for terminal, startup, and training for each library.

6. The Department of Public Instruction/Division for Library Services as coordinator for the statewide data base should request a copy of the OCLC tapes from WLC. These tapes should contain all records from Wisconsin libraries in the same sequence these records appeared on the tapes. WLC should forward a copy of Wisconsin records that are received as a result of the archival runs.

7. The Department of Public Instruction/Division for Library Services and the Wisconsin Statewide Automation Coordinating Committee should select a COM vendor and forward the OCLC tapes for merging of duplicate records and holdings, the generation of a test COM catalog, and finally a production COM catalog. This COM catalog will contain well over 2,000,000 Wisconsin holdings, from a variety of sources, and should be distributed to OCLC and non-OCLC libraries.

8. UW - Oshkosh and future OCLC libraries with CLSI systems should consider the acquisition of the on-line interface hardware to convert data from the OCLC screen to the CLSI circulation file, as libraries in other states have done. The cost trade-off should consider the cost of the hardware and the cost of rekeying

the data into CLSI, or the cost of converting the OCLC records on a delayed basis.

9. The Reference and Loan Library Catalog is a manual card file of the Refernce and Loan Library's collection. This file is heavily used as a source of location data. The Reference and Loan Library Catalog should be converted to machine readable form as an OCLC retrospective conversion project and made part of the statewide data base. This should receive a very high priority for conversion. Once it has been converted, the manual catalog can be eliminated, along with the costs of manual maintenance and searching.

7.1.3 Retrospective Conversion on OCLC

With the present state of technology and vendor products and services, the authorized OCLC retrospective conversion projects could represent the most cost-effective method of retrospective conversion. After locating a bibliographic record on the OCLC data base (approximately 75-90% of the time), the user adds the local call number and holdings data; for the remaining titles not available on the OCLC data base (10-25%) the user keys in the bibliographic data as well as the local data. As a result, OCLC processes the data and sends the library (or the network broker - WLC) a magnetic tape with both bibliographic and local data, but no catalog cards. This tape can be used for a variety of purposes, including addition to the statewide data base.

The OCLC cost for the retrospective conversion activity is minimal - approximately $0.05 per record for the magnetic tape. OCLC is currently instituting a new $.60 per record charge for retrospective conversion between 8 a.m. and 3 p.m. (CST) and a $.05 charge for other time periods. The other costs to the library are the OCLC terminals required during the time period of the conversion project, the costs of the OCLC magnetic tape, and the library staff to perform the conversion activities. The library may calculate the staff time required for conversion by assuming the rate of 20-30 titles per hour per terminal; the 30 title per hour rate is possible if the library has a very high hit rate and does not make changes to the bibliographic record.

Wisconsin libraries which are members of OCLC should be encouraged to participate in an OCLC retrospective conversion

project as soon as possible, particularly if the retrospective conversion activities can be conducted during non-prime time.

7.1.3.1 Floater Terminals for Conversion

OCLC terminals cost approximately $4000, including installation. Several libraries will need multiple terminals for retrospective conversion, and the terminals will not be required after conversion. In order to take advantage of this situation the Department of Public Instruction/Division for Library Services should purchase several OCLC terminals and use them as "floater terminals" by lending them to the libraries during the retrospective conversion project; when one library's project is completed the terminals would be removed and reinstalled at the next library. The floater terminal concept is a much more cost effective procedure than for each library planning a retrospective conversion project to obtain a one-time budget from LSCA, the state, or their own institution.

COST ESTIMATE: $40,000 - $80,000 (10-20 terminals)

7.2 RLG/RLIN

7.2.1 Current Status

Several research libraries are converting to RLG/RLIN from OCLC; as a result many hundreds of thousands of bibliographic records will be added to the RLG/RLIN files and may not be available on the OCLC files. Several Wisconsin OCLC libraries may be affected by this migration (due to the absence of these records on the OCLC data base); the major impact will be at UW - Madison, with a lesser impact at some special libraries, and some larger academic and public libraries.

7.2.2 Access to RLG/RLIN Records

RLG/RLIN provides a special "Search Only" service which permits libraries which are not RLG/RLIN cataloging libraries to open an RLG/RLIN searching account and search all of the RLG/RLIN files and display (print out) the desired bibliographic records. This service costs approximately $30 per hour and is accessible through TYMSHARE (TYMNET) using any regular terminal with a dial-up capability (dial-up terminal). It is expected that 10-20% of the current cataloging records not found on OCLC may be found on the RLG/RLIN data base. Depending upon the speed of searching, these records may be retrieved for $2.50 - $5.00 each (search 10 titles and find 1 or 2).

Access to RLG/RLIN records is available through a variety of indexes, including subject headings, title words, and individual words in an agency name. Some OCLC libraries with RLG/RLIN search only accounts use RLG/RLIN files to locate a particular record which is difficult for the library to find on the OCLC files due to incomplete information at the library, difficulty with some OCLC search keys which provide excessive hits, etc. After locating the RLG/RLIN record and noting some numerical identifier such as the Library of Congress Card Number, Superintendent of Documents number, ISBN, ISSN, etc., the OCLC library would then search the OCLC files using one of these identifiers to locate the desired record. If the record is not in the OCLC file, the OCLC library could proceed to key in the full record, since the full RLG/RLIN record could have been printed out on their search terminal. Libraries utilizing the RLG/RLIN search only service remain full cataloging members of OCLC; the search only service is merely a supplementary source of cataloging data.

7.2.3 Recommendations for Limited Use of RLG/RLIN Search Services

1. The Reference and Loan Library (or Milwaukee Public Library) and UW - Madison (or another UW campus) should provide search only access to RLG/RLIN files for public and academic libraries respectively. The availability of one more bibliographic tool, which will have a higher and higher hit rate over the years, will be very valuable to Wisconsin libraries as a source of cataloging and ILL verification and location information. Due to the capability to search RLG/RLIN by any author, subject heading, or individual word in the title, the system can be used to identify records which may be in the OCLC files, but cannot be located with OCLC search strategies. As systems and local libraries

begin to use commercial search services such as Lockheed, BRS, New York Times, etc., they might also consider offering bibliographic searching in RLG/RLIN.

2. WLC should be requested to offer RLG/RLIN search service training to Wisconsin libraries.

3. Since the RLG/RLIN files also contain detailed holdings information including copy, location, and call number data, the RLG/RLIN files can be used as a supplementary source of ILL information from out-of-state libraries. The same searching accounts, terminals, and procedures used for bibliographic searching can also be used to obtain ILL information. RLG/RLIN does not have an automated ILL process like OCLC; traditional mail, telephone, or TWX procedures must be used to request the material. The Reference and Loan Library, Milwaukee Public Library, UW, and perhaps eventually the systems, should offer ILL location services on RLG/RLIN (for ILL location data not on OCLC) for public, academic, and area libraries in Wisconsin.

4. Reference staff at some Wisconsin libraries should consider RLG/RLIN search services to discover the existence of non-known item material since the RLG/RLIN files can be searched by subject headings, full or partial call numbers, etc.

7.3 WLN

7.3.1 Current Status

The Washington Library Network (WLN) is a bibliographic utility serving libraries in the Pacific Northwest. The WLN system includes a very powerful authority file and authority control component. Searching is available through any authority file term, numeric identifiers (LCCN, ISBN, etc.), and title keywords. WLN does not offer non-member searching accounts.

7.3.2 Replication of the WLN System

One of the most unusual aspects of the WLN system is that it is available for replication under a license agreement. At the present time, the National Library of Australia has replicated the WLN system and has been testing the system for several months, and SOLINET has licensed the WLN software for conversion to the SOLINET computer. Several other large libraries and network brokers are also considering obtaining a copy of the WLN system for their own use, including the University of Illinois. WLC should include in their long term plans a detailed evaluation of the WLN software and system.

Operating the WLN system requires the use of an IBM 370 or compatible computer. Any agency considering WLN must have access to or obtain a computer, hire and train operators, systems programming and applications programming staff, etc.

If WLC were able to install and operate the WLN system there could be a wide variety of services offered, including authority control, acquisitions (ordering, receiving, claiming, etc.), fund accounting, cataloging, and reference searching. By loading the Wisconsin statewide data base tapes the system files could contain local information including location and call number data.

7.3.3 Recommendations for Potential Use of WLN System

While it is a remote possibility at present, the use of the WLN system in Wisconsin (as a supplement to OCLC services) should not be ignored. If the Council of Wisconsin Librarians (COWL) makes the decision to install the WLN system, the libraries in Wisconsin should review the WLC service plans, priorities, potential schedules, and price structure. Potential services beyond current OCLC services should be reviewed with respect to the WLC price and the present cost of performing the similar service. Other advantages such as faster service, more accurate data, and access to local data should also be considered.

One of the technical and economic difficulties which any potential WLN installation must face is the physical access to the computer and files by library terminals. If OCLC permits the on-line interface between its own future Remote Communications Processor (RCP) and the WLC computer, all OCLC terminals in Wisconsin would have access to the WLC computer. If, on the other hand, OCLC felt that the WLC computer would

offer competing services either now or in the future, OCLC might well prohibit the interface. This situation would require all libraries, including OCLC libraries, to access the WLC computer by using non-OCLC terminals, non-OCLC communication lines, etc. The cost of a second communications network would be very expensive to operate, and the additional operational costs would have to be borne by the user libraries.

7.4 WLC

7.4.1 Current Status

WLC is currently a broker of OCLC services, supplying network services such as training and installation support to Wisconsin libraries. WLC also pays for the communications lines from terminals throughout Wisconsin to the OCLC computers in Columbus, Ohio; these communications costs are then reallocated to WLC libraries on the basis of the number of terminals in each library.

7.4.2 The Replication Decision

The previous section described the potential of WLC selecting and installing the WLN system and offering services throughout Wisconsin. If and when COWL begins the evaluation of WLN replication, Wisconsin libraries should review the current status and provide feedback to COWL where possible. The feedback should be in the area of reactions to potential services, costs, etc., and the feasibility of utilizing and paying for these services; the feedback should be as realistic as possible, but in no way should it be taken as a commitment to use these services.

7.4.3 Recommendations for WLC Services

1. WLC should offer RLG/RLIN search service information and workshops. WLC should assist those libraries that wish to use RLG/RLIN search services by opening RLG/RLIN accounts and conducting training sessions.

2. WLC should copy Wisconsin records from the OCLC tapes and send the new DPI/DLS copies of the tapes to the Department of Public Instruction/Division for Library Services for retention and storage (or possibly at UW - Madison).

3. As new OCLC archival tapes are received from OCLC, the Wisconsin records should be copied and sent to DPI/DLS.

7.5 VENDORS OF ON-LINE CATALOGING SYSTEMS

7.5.1 MINIMARC

The MINIMARC system marketed by Informatics is a mini-computer based turnkey cataloging system. LC MARC records are stored on hundreds of floppy disks with one or two floppy disks added each week, and an index to these records stored on microfilm, which is updated weekly. When a library wishes to catalog a particular title the microfilm is accessed to determine which floppy disk contains the required record, the correct floppy is loaded into the computer, the required record is copied on the terminal screen, and any necessary modifications to the record are made. When processing is completed, a set of catalog cards is produced by a printer attached to the mini-computer.

This system is somewhat slow due to the need to manually select and insert the proper floppy disk for each record to be cataloged. However, the system is not very expensive. At a cost of approximately $50,000 to purchase plus $4,000-$5,000 per year for maintenance, several libraries which would have a high hit rate on MARC records could share the system and bring the cost to under $0.50 per record, including catalog cards. Some libraries would have to travel to the minicomputer site at one of the libraries on a shared basis, since the system does not support remote terminals, and the system cannot be moved easily to another location.

The MINIMARC designers have long range plans to replace the hundreds of floppy disks with a single videodisk - which would remain in the computer all the time, until replaced by the next week's cumulative MARC file. It will take several years and some advancements in videodisk technology for this new product to be available. If and when the product becomes available, a few small to medium-sized libraries in an area could make effective use of such a catalog system.

There is also an on-line interface between MINIMARC and the CLSI system allowing user modified MINIMARC records to be added to the CLSI files.

7.5.2 Circulation System Vendors

The Dataphase circulation system contains software which allows an external resource catalog file to be loaded into the disk files; records can then be selected from this file, modified by the library, and stored in the circulation file.

This process has been used for retrospective conversion, but this same software could be modified (although it has not been to date) to load MARC tapes from LC and perform current cataloging. One reason current cataloging has not been implemented on a circulation minicomputer is the capacity limitations of the system (see Section 6.2.2). If more powerful minicomputers become available, it is quite possible that a library may be able to perform current cataloging from MARC on the same computer as the circulation system. These expansions of circulation systems do not produce catalog cards as do the bibliographic utilities, and, thus, would only be suitable for libraries which require machine readable catalog records for COM catalogs or a future on-line catalog.

Chapter 8

ACQUISITION SYSTEMS

8.1 THE CATALOGING UTILITIES

8.1.1 WLN

At present there are very few on-line acquisition systems in operation and most of these are in-house one-library systems. WLN has one of the most comprehensive acquisition systems, including ordering, receiving, claiming, cancellation, fund accounting, and an automatic two-way interface to the catalog files. The WLN system is not available in Wisconsin unless WLC makes the decision to replicate WLN for Wisconsin, install the system, offer acquisition services, and resolve the communication problems. The services, opportunities, and barriers to replication have been discussed in Sections 7.3 and 7.4.

8.1.2 RLG/RLIN

The RLG/RLIN system has a prototype acquisition system operating at Stanford University; the system is similar to WLN's without the fund accounting. RLG/RLIN is expected to revise the acquisitions software and make it available to its members by 1982. There are no RLG/RLIN members in Wisconsin at the present time.

8.1.3 OCLC

OCLC is currently designing and developing the OCLC acquisitions system. The system is expected to be implemented in a series of phases, with the first phase beginning field testing at a few libraries about June 1980; no Wisconsin libraries are participating in these field tests. After the field testing any library which participated in the

test and wrote an evaluation report should be contacted for a copy of the report. By reviewing the report the Wisconsin libraries may be able to determine how well the system performs, its strengths and weaknesses, the turn-around time for printed documents, the accuracy of the claim cycle, the impact on book delivery schedules from the vendor, anticipated staff savings, etc. After OCLC's revisions to the first phase as a result of field testing, the system should be generally available sometime in late 1980 or 1981. When the system becomes generally available, each OCLC library should determine if the new acquisition system meets its needs, is reasonably priced, and can be supported by the library's budget.

8.2 THE CIRCULATION VENDORS

Several of the circulation vendors have plans for, or are in the process of, developing acquisition systems as an additional service to be performed on the same computer as the circulation system. In most cases the addition of a second application (acquisitions) on a circulation computer chosen to handle only the circulation load will cause additional capacity problems (See Section 2.2 - Inadequate Capacity).

CLSI has general plans to use their new generalized software (Release 25) to perform automated acquisitions. CLSI is presently concentrating on developing and optimizing the new software for circulation purposes; the acquisition system will probably not be available for general use (beyond the first testing libraries) until 1981 or 1982.

Dataphase has a contract with Atlanta Public Library to provide an acquisition system on the same computer used for circulation. At the present time the functional specifications have been written and are being reviewed by potential users of the acquisition system. Completion of the development of the acquisition system to the point where it is generally available to users could be as early as late 1980, but will more likely be in 1981.

The other circulation vendors are not as far along in planning for acquisitions, and are not expected to produce a production system in the near future.

8.3 BOOK JOBBERS

8.3.1 On-line Book Order Systems

Baker and Taylor and Brodart have on-line book ordering systems. A book ordering system is not the same service as a full acquisition system; an on-line book ordering system assists the library in producing detailed purchase orders and transmits the orders on-line to the book jobbers. A full acquisition system in addition to producing printed purchase orders (which must be sent by mail to a book jobber) also provides full and partial receiving, automatic claiming, cancelling, fund accounting, and in some cases encumbering and fund control. Each vendor is in the process of augmenting the on-line order system to add more of the functions of an acquisitions system.

The Baker and Taylor "LIBRIS" system and the Brodart "OLAS" system are functionally similar. The user searches a file of approximately 800,000 current titles for a particular title. For available titles, the user then adds a purchase order number, number of copies, location and shipping data, and some library internal data such as fund code. Purchase order sets are printed at the terminal for the library's internal filing system, and the same information is transmitted on-line to the vendor's files. It is possible to use the book ordering system to print the purchase order set which will be mailed to another vendor; it is not mandatory that the library order books from the on-line book order vendor. In some cases the title being searched is in the file but is out of print or must be ordered directly from the publisher. The system will inform the user; in the latter case the user may print out a purchase order set and send it to the publisher.

The cost structure of LIBRIS and OLAS includes a basic monthly fixed fee dependent on the volume of book orders; this fee includes the terminal rental and some number of connect hours. The vendors can also offer an alternative fee structure which includes a lower fixed monthly fee plus an hourly rate for each connect hour. Both systems are relatively simple and rapid to operate; after the user is logged on to the system, a set of multiple copies of the same title can be ordered in approximately one to two minutes, including the printing of the purchase order set.

8.3.2 Package Bids

In many libraries using these systems the choice between LIBRIS and OLAS was not made on the basis of a feature-by-feature comparison of the systems, nor by the systems' cost; the choice was made as part of a book bid package. In this case the library specified the requirement for an on-line book ordering service as part of the selection of a book jobber. If Brodart won the contract on the basis of lowest total price, the library would use OLAS; if Baker and Taylor won, the library would use LIBRIS.

8.3.3 Additional Systems and Services

Baker and Taylor offers a batch acquisitions system called BATAB which operates on the user's own computer (the city, county, or academic computing center).

Brodart also offers an abbreviated on-line book ordering system called "Book Express" which is less sophisticated and less expensive than OLAS. With Book Express the user indicates the title and number of copies required and the system responds with the number of copies currently available in the Brodart inventory. If the user orders the books, the copies will usually be shipped within 24 hours. What is avoided in this system is the situation where the library is in a rush for the material, and finds out two weeks later that the vendor is "Temporarily Out of Stock"; the library would then be faced with the choice to wait until the jobber receives additional copies or cancel the order and place the order with an alternate vendor.

8.3.4 Book Ordering Interface with Circulation Systems

There is currently an on-line interface between Brodart's OLAS book ordering system and CLSI's circulation system; after the user has placed an order on OLAS using the CLSI circulation terminal, the bibliographic record is automatically converted into the CLSI circulation format and inserted into the on-line CLSI file. The entire process of ordering and adding the record to the CLSI file takes less than two minutes per title.

8.4 RECOMMENDATIONS FOR USE OF ACQUISITION AND BOOK ORDERING SYSTEMS

1. Wisconsin libraries should consider the cooperative use of acquisitions systems as they become available; it may be possible to achieve some cost savings as a result of bulk book orders for the same titles ordered at the same time.

2. Cooperative book acquisitions bid packages may provide a larger discount structure from book jobbers (than single library bid packages); automated acquisitions systems may support this type of arrangement.

3. If WLC decides to offer automated acquisitions (as part of the WLN package), the libraries should consider as part of their decision-making process the fact that the WLN acquisitions and cataloging systems are well integrated; the acquisition data, including any holdings information, is automatically transferred to the catalog files whenever the library is ready to catalog the material. The catalog information is also automatically transferred to the acquisition file if the library wishes to order an additional copy. The WLN acquisition system permits one library to view portions of the in-process record of another library as a way to coordinate collection development. Commercial vendors, however, do not permit this review of another library's in-process file.

4. Libraries considering an automated acquisitions package addition to their circulation system should perform some form of live benchmark test under full circulation and acquisition load to see if the circulation hardware has sufficient capacity to handle both loads.

5. Libraries in the future considering the installation of a new circulation system should consider acquiring a computer large enough to support both circulation and acquisitions; if this option is available and selected, a live benchmark test of both transaction loads should be performed.

6. Libraries with future book purchasing bid packages should investigate the approximate costs and benefits of an automated book ordering system; if such a system is determined to be useful, the libraries should include the requirement for an automated book ordering system as part of the bid package.

7. OCLC libraries will have the opportunity to choose the OCLC acquisitions system after a review of the costs and benefits; OCLC may be able to obtain some of the bulk purchase discounts from all book jobbers due to the magnitude of potential library orders from OCLC libraries.

8. Libraries considering automated acquisition systems or book ordering systems should observe these systems in operation at OCLC, CLSI, Dataphase, Brodart, or Baker and Taylor libraries (or at conference exhibits such as ALA); discussions with actual users will provide an accurate assessment of the systems' actual strengths, weaknesses, costs, and user reactions.

9. The relative funding priority for acquisition systems versus other budget areas is the responsibility of the individual library; the cost and benefit trade-offs must be analyzed for each individual library. Where state funding is available the Wisconsin Statewide Automation Coordinating Committee should assist in defining the priorities of acquisition support to specific libraries. It would be desirable, but not mandatory, that other academic libraries and UW utilize the same acquisition system with access to each other's in-process files, in order to coordinate collection development.

Chapter 9

SERIALS SYSTEMS AND SEARCH SERVICES

9.1 SERIALS SYSTEMS

9.1.1 Serials Cataloging

Each of the bibliographic utilities, OCLC, WLN, and RLG/RLIN, supports the on-line cataloging of serial titles. OCLC is the host computer for the CONSER project and, therefore, maintains all of the contributed and all of the LC-authenticated CONSER records as part of its on-line files. RLG/RLIN has recently loaded the CONSER data base and is in the process of building a large joint serial data base of 150,000-250,000 titles from three large universities (UCLA, Stanford, and UC-Berkeley).

9.1.2 Serials Check-in

OCLC is the only utility which supports serials check-in; no other utility, vendor, or turnkey system available today offers an automated serials check-in service. The OCLC serials system requires the user to key in an acknowledgment of the receipt of the latest issue of a serial and also key in the next expected issue number (Vol. 14, No. 6, etc.). At this time, the system does not predict the next expected issue, provide automated binding information, or automatically update the serial holdings statement for each serial title; these changes are in various stages of development.

9.1.3 Union List of Serials (Batch)

Many libraries in Wisconsin have placed their serial titles and holdings in one of several union list of serials (ULS) data bases. These ULS systems are not on-line; rather, they are batch systems which produce either a printed list or a microform file of serial titles and holdings. The use of such a valuable finding tool for serial materials is included in this report due to its importance to good library service in Wisconsin. Many special libraries throughout the state have their current serial holdings on these systems.

9.1.3.1 UW - Madison ULS

The UW - Madison ULS is a printed bookform ULS and contains 68,000 titles. The records contain location and detailed holdings information. In addition to the bibliographic and holdings data, the file contains a large number of cross-references (from old to new titles, agencies, etc.).

9.1.3.2 Wisconsin ULS - MINITEX System

The WLC ULS project has contracted with MINITEX (Minnesota) to use the MULS (Minnesota Union List of Serials) system. Approximately 185,000 Wisconsin titles are being added to the MULS data base; when completed in early 1981, MINITEX is expected to produce a computer tape of the serial records and a camera ready copy of the Wisconsin ULS. Two Wisconsin institutions (UW - Madison and Milwaukee Public Library) are planning to extract data from the MULS tape and produce an area or institutional ULS for use by member libraries.

9.1.3.3 Wisconsin ULS - On-Line OCLC System

WLC is currently inputting serials records from some Wisconsin libraries in the OCLC system as part of the CONSER (Conversion of Serials) project. These OCLC records indicate that a particular library owns the serial, but not which specific issues it holds. Without this detailed holdings information, this file cannot be used to locate the specific issue required by a patron, and, therefor, cannot be used as a statewide Union List of Serials. Although OCLC is developing programs

to provide detailed holdings data, searching of the OCLC on-line file would still be limited to the 54 OCLC members.

9.1.3.4 Incompatible Files

Since most of the ULS systems were developed locally, the systems are, naturally, not compatible; the input format used by one library to provide data to its ULS system will not be the same format, and, therefore, unacceptable as input to another ULS system. It may be possible to write programs which will convert the data from one system to another system.

9.1.3.5 Recommendation - Selection of a Statewide ULS System

It would be very useful to have a single large microform file of the combined serial holdings of as many Wisconsin libraries as possible. Due to the complex nature of a serials data base, including detailed holdings information for each library, the statewide Union List of Serials should be produced separately from the statewide data base of other materials. It is recommended that an ad hoc committee of serial librarians review existing Wisconsin and out of state ULS systems and select one for use in maintaining a statewide ULS.

There are many serials lists and union list of serials (ULS) programs in use in Wisconsin. Two of the major ULS systems are the UW - Madison and the WLC (MINITEX) systems described above. There are many ULS systems in other states which may be available for use; it is not clear which ULS system should be considered the primary candidate. Each current program should be reviewed to determine if it meets the criteria listed below; if not, the cost of expanding the program to add the necessary features, compared to the cost of obtaining another ULS system and converting the existing data bases should be analyzed.

Regardless of the ULS selected, the Department of Public Instruction/Division for Library Services should operate the statewide ULS and receive the necessary funding to expand the program to accommodate the new features, add the new library processing load, including special libraries, and pay for the necessary file conversion programs to convert other machine readable serials lists to the statewide ULS input format. The OCLC and MINITEX ULS tapes, among others, should be used as the foundation of the statewide ULS data base.

DPI/DLS may contract with another agency such as WLC, Milwaukee Public Library, UW - Madison, etc., to operate the ULS. The Wisconsin Statewide Automation Coordinating Committee (see Section 12.1) should decide on the relative funding priority of the ULS program and estimate the budget for the expansion of the statewide ULS. It is beyond the scope of this report to present a cost estimate of this type of system, since it is not known which system will be utilized, how many conversion programs will have to be written, how complex these programs will be, and which agency will be responsible for the development and operation of the statewide ULS system. Both UW - Madison and Milwaukee Public Library should be considered as potential developers for a statewide ULS.

The selection criteria should include:

1. The ability to handle a large number of different libraries; the system design should also be able to handle 100,000-200,000 serial titles.

2. A reasonably simple and straightforward input format, which accommodates national bibliographic and format standards.

3. A willingness on the part of the system owner to process data from libraries throughout the state.

4. Agreement on prices for input of new data, processing, and distribution of the microform file.

5. Ability of the system to modify the output format and possibly the input format to suit the statewide needs for a ULS.

6. Ability of the system to extract bibliographic and holdings data for a single library or group of libraries to form local, area, or special discipline ULSs.

7. The amount of data already converted to existing ULS systems; this represents the previous investment of specific libraries.

8. The relative complexity of converting existing data base formats into the input or file format of the selected ULS. This may prove the most expensive cost item in the system; a programmer may have to write a separate conversion program for each existing ULS data base. The cost of writing some of these programs could well exceed the cost of recreating the input of some of the smaller ULS data bases to the new ULS system. Even if a

conversion program is written, the library is likely to be required to fill in some additional data for each record which the new ULS system requires that was not required or available as part of their old ULS system.

It would be possible to produce a statewide ULS which meets the above criteria in 2-3 years. This is a very valuable resource, relatively inexpensive to produce except for library labor, quite labor intensive (with the library supplying the labor to fill out the input documents), and usable as a finding tool in a large number of Wisconsin libraries.

If the Wisconsin libraries are willing to contribute to a statewide ULS by purchasing the final product and supporting the input of their titles and holdings, the Wisconsin Statewide Automation Coordinating Committee should select a statewide ULS as a high priority for early funding and resources.

9.2 SEARCH SERVICES

The commercial and governmental bibliographic search services have been briefly described in Section 3.1.3.4. The purpose of the search services is to discover the existence of pertinent journal articles needed by a library patron. Searching the files of the bibliographic search services is an expensive proposition; the costs vary from $35 to $120 per hour to search. Searching expertise and experience with the particular subject data base are required to obtain the results at the lowest reasonable cost.

Several Wisconsin libraries have the required budget and the expertise to search specific search service data bases; law libraries search LEXIS, medical libraries search MEDLINE, science libraries search engineering and physics files, reference departments of larger libraries search more general files such as the New York Times and ERIC. It costs a library a considerable amount of time and money to train an individual searcher to become and remain familiar with searching in general, and become an expert in a few specific data bases. It can be seen that the larger libraries, and those libraries with patrons in a small number of well-defined disciplines, will tend to be able to justify the expense of such training. This results in an imbalance of service; the patron of a library without the expertise or access to the search services will not discover the existence of the needed material.

9.2.1 Recommendations

The following recommendations will tend to improve or expand the access to the commercial search services.

1. A directory of libraries utilizing search services should be developed, maintained, and disseminated by the Department of Public Instruction/Division for Library Services. The Wisconsin Dissemination Project (WDP), for example, is developing a file of state and local education resources, such as people, organizations, and curriculum materials, called WIRE (Wisconsin Information Resources for Educators), which is searched on-line by CESA and WDP staff using the WISE search program.

2. The directory should contain the names of individuals, if possible, and their areas of searching expertise. The directory should contain an index by subject area.

3. A system of bilateral or statewide agreements should be developed which would allow experts to search specific data bases on behalf of patrons of other libraries, with appropriate compensation for the labor and search service charges. The method of allocation could be determined by the Wisconsin Statewide Automation Coordinating Committee and would be a function of funding availability.

4. The systems, UW, Milwaukee Public Library, Madison Public Library, Reference and Loan Library, and the Department of Public Instruction/Division for Library Services should train searching staff in specific, well designated, and minimally overlapped areas. The systems, UW, Madison Public, and Milwaukee Public Library should develop expertise in areas required by patrons in their area where the local libraries cannot support the service; by taking advantage of this form of economy of scale, requests for information could be routed from the library to UW (academic) or one of the systems, Madison Public, or Milwaukee Public Library (public) for searching.

5. Each system, UW, and Milwaukee and Madison public libraries should own a terminal and an acoustic coupler to be used for searching.

6. If the systems cannot adequately support this type of service initially, a continuation of the arrangement of the Reference and Loan Library with the UW - Madison Engineering Library for

searching could provide this service until such time as the workload, expertise, and financial base were built up to the point where individual systems could justify the service.

7. Access to the search services is accomplished by dialing special Wisconsin telephone numbers in Milwaukee and Madison, and being automatically connected to the search service computer. The systems within a local calling range of these cities do not have to pay any telephone toll charges to access these special numbers. Several UW campuses and some of the systems are not within a local calling range of one of these numbers and would have to pay toll charges; it is proposed that these systems be compensated for their toll charges to the special numbers, or paid for a "foreign exchange" or extended area line which will eliminate the toll charges, whichever is less.

8. The Milwaukee and Madison public libraries should provide a higher level economy of scale search service by providing searching expertise on data bases beyond those the systems can reasonably support.

9. When a library staff member needs to be trained in a new search service or new data base, every effort should be made to allow the searcher to observe and practice with an expert in the particular search service or data base; a half or full day trip to observe and practice with an expert will be quickly paid for, considering that inefficiencies and errors cost $35 to $120 per hour. An example of an effective training program is the Wisconsin Dissemination Project (WDP) where state staff have trained existing staff at the CESA retrieval centers to do computer-assisted searching of ERIC and WIRE (Wisonsin Information Resources for Educators). A local contact person for WDP, usually a media director or school librarian, from each participating school district is selected and trained to utilize the information services of WDP.

10. If OCLC provides an on-line connection from its computers in Columbus to the commercial search services, each of the OCLC libraries in Wisconsin will have lower cost access to the search services; the OCLC terminals and printers in these libraries would then be usable to search these data bases and the use of the OCLC terminals could then expand to the public service areas. The economic trade-off compares the possible cost of an additional OCLC terminal, printer, and the line cost with the savings in communication costs ($5-$10 per hour) charged by the search services.

11. Terminals acquired for other purposes such as an on-line ordering system may also sometimes be used to access commercial search services; terminals that access RLG/RLIN can always be used to access the commercial search services (and vice versa).

The search services and the statewide union list of serials (ULS) are complementary services; the results of a successful search in a bibliographic search service file show the titles of pertinent journal articles and the journal issues or serial volumes in which the article appeared. The ULS, in turn, shows which libraries in Wisconsin have the particular issue or volume containing the pertinent article; the ULS is used to locate the material if the patron's own library does not have the required journal issue or serial volume. Without the statewide ULS, a successful on-line search on the search service files could result in a time consuming and costly manual search by telephone or mail to locate a library with the proper material.

Chapter 10

ADDITIONAL RECOMMENDATIONS

This chapter describes a series of general recommendations which are not specific to a particular automated system or form of automation such as circulation or cataloging, and may have not been described in other sections of this report. The recommendations are grouped according to the organization which would most likely be responsible for implementing the recommendations.

10.1 DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES

There are recommendations for Department of Public Instruction/Division for Library Services action throughout this report; coordination of the statewide data base, development of expertise in specific search services and data bases, and operation of a clearing house for circulation RFPs are examples of these recommended actions. Following are additional recommendations for Department of Public Instruction/Division for Library Services action:

1. The Department of Public Instruction/Division for Library Services should hire one or two senior library consultants, and train some existing staff in different areas of automation such as circulation systems (planning, selection, budgeting, and operation), union list of serials (local, area, and statewide), acquisitions, microform catalogs, and cataloging systems. These automation consultants would be used to assist Wisconsin school and public libraries and consortia in planning and acquiring various types of automated systems. In order to train the staff, there needs to be both an in-state and out-of-state travel budget. The staff should visit current user installations of various systems, establish good contacts with these users for future information needs, visit vendor exhibits at conferences such as the American Library Association, American Society for Information Science, state library conferences, special library

associations, etc. The Department of Public Instruction/Division for Library Services automation consultants should work as part of a team with public and school libraries acquiring and installing new systems; the consultants would learn the details of systems acquisition and installation, and be in a position to document their experiences and assist the next group of libraries. In this manner some of the difficulties may be avoided, many of the cost saving ideas and procedures will be passed along, and future installations will be less costly in terms of both dollars and hours.

2. The automation consultants should assist a public or school library considering a circulation system by suggesting good sample RFPs from the clearinghouse, reviewing the library's draft RFP for omissions and suggestions, and reviewing the vendor proposals to point out potential problems, inconsistencies, and cost and performance implications.

3. The automation consultants should assist in the planning for conversion to a circulation file, a microfilm catalog, or a variety of other services by providing alternatives, approximate costs, suitable vendors, and previous user experiences and contracts.

4. The Department of Public Instruction/Division for Library Services should begin to allocate LSCA funds and State funds to projects supporting statewide goals such as the generation of input for, or data base conversion to, the statewide data base and microform catalog.

5. The Department of Public Instruction/Division for Library Services should support the conversion of key data bases such as the Milwaukee Public Library circulation file and other circulation files.

6. The Department of Public Instruction/Division for Library Services should take the lead in coordinating the statewide data base project. Included as part of this project are:

   a) The establishment of a permanent, formal Statewide Data Base Task Force.

   b) The definition of a work plan and requirements for statewide efforts.

c) The selection of a COM and conversion vendor.

d) The upgrade as necessary to full MARC bibliographic records and the merging of various data base tapes including:

i) OCLC Cataloging Tapes (from WLC)

ii) Milwaukee Public Library Circulation tapes

iii) CLSI Circulation tapes (UW - Oshkosh)

iv) Book jobber acquisition tapes from all libraries

v) Other data bases as available

e) The generation of a test COM microfilm and microfiche catalog.

f) The generation and distribution of the statewide COM catalog(s).

g) The granting of financial support to certain libraries for the acquisition of the statewide COM catalog and microfilm readers.

h) The generation of revised interlibrary loan procedures based upon use of the Wisconsin COM catalog.

i) The establishment of procedures for individual libraries to add new titles and holdings to the statewide data base, including libraries without any automation, data bases, or terminals. Investigate the use of typing input on Selectric typewriters with an OCR type font, and the use of microcomputer terminals with attached diskettes.

j) The development of a preliminary priority list for retrospective conversion of other non-converted collections. The priority list should consider collection size (largest first?), collection uniqueness (only copies), availability of staff and space to support conversion, highly requested ILL material, etc.

7. Once the statewide data base is established and the COM catalogs distributed, the Department of Public Instruction/Division for Library Services should consider placing some of the Reference and Loan Library material in those libraries with sufficient

space to house small portions of these collections. Since the future dispersed locations of some current Reference and Loan material would be available on the statewide COM catalog, access is still assured; usage of some of this material may actually increase due to the availability of the bibliographic and location information on the COM catalog. With better knowledge of materials already available in other Wisconsin locations, the Reference and Loan Library can alter its collection development policies to acquire unique materials, too expensive and/or too rarely used for any single library to purchase.

8. The interlibrary loan operations at the Reference and Loan Library should be redirected to coordinate and build up the statewide data base and the generation of the COM catalog. The combination of the OCLC/ILL system and the statewide COM catalog should improve statewide ILL dramatically. The Reference and Loan Library ILL operation should operate a second-level search service (after system headquarters and area resources are exhausted) for those those materials which are not on OCLC or the COM catalog. Libraries with either or both finding tools should be encouraged to borrow directly from the holding library. Libraries without finding tools would use the Reference and Loan Library for difficult cases of bibliographic verification and location.

9. The current statewide interlibrary loan committee should be given an additional charter to consider procedural changes in locating, requesting, borrowing, delivery, and reimbursement due to the future availability of the statewide COM catalog, and the nationwide OCLC files.

10. The Department of Public Instruction/Division for Library Services should consider the purchase of a sophisticated word processing system. This system should be used as a small computer to maintain and generate current statewide standards and specifications, funding and grant information, special lists, tailored RFPs for Wisconsin libraries, etc., as well as for secretarial purposes.

10.2 SYSTEMS

The public library systems play an important role in library resource sharing in Wisconsin. By taking the part of a broker the systems can bring services to the smaller libraries in the system which the smaller libraries cannot afford on their own. The systems can take advantage of certain economies of scale, by purchasing an automated circulation control system which can be shared by its members, by hiring and training data base searchers, by providing OCLC processing center services for some of its members, etc.

The principal automated activity currently being planned by two area consortia (one for academic libraries centered at UW - Stout and one for public libraries at Janesville) is the acquisition of an automated circulation control system for use by their member libraries. One very strong recommendation is that the systems closely adhere to the recommended principles for acquiring these systems as outlined in Chapter 6. Unless the systems accurately determine the member libraries' transaction load and test this load during a live benchmark test, there could be the likelihood that the delivered system will run out of capacity before all of the libraries have been installed on the system. This will increase the unit cost of operating the system for the installed libraries.

10.3 ALL LIBRARIES

The proliferation of microcomputers in our society will affect activities in libraries. The installation of public access microcomputers for personal use or instructional purposes is not related to the concerns of this report, but microcomputers will also begin to be used in internal library operations. They will operate in an off-line mode and will be used either for small, self-contained operations not requiring large files or to interface with other automated operations. These microcomputers are simple to program and inexpensive to obtain and are beginning to be used by libraries across the country to meet immediate needs. Exchanges of programs between libraries using similar hardware will be on an informal basis. Libraries should encourage experimentation in this area, particularly as the use of home computers expands.

PART IV

1981-1985: A FIVE YEAR PLAN

Chapter 11

INTRODUCTION TO THE PLAN

This chapter defines a time table for automation activities in Wisconsin libraries. All of the activities described in this five year plan have been defined in greater detail in previous sections of this report. The dates selected are somewhat difficult to achieve; the activities will consume staff time from the Department of Public Instruction/Division for Library Services, public, school, academic, and special libraries, systems, WLC, and UW. The schedule indicates the fiscal year the activity could take place. For major tasks which span multiple years, the beginning and ending dates are indicated.

The time period from 1981 to 1985 is meant to include the period from July 1980 to June 1985, or some other appropriate fiscal year. Although the state fiscal year (FY) 1980/1981 began in July 1980, it is expected that this report will be reviewed and approved early enough in fiscal 1980/81 for certain activities to be initiated in fiscal 1980/81.

11.1 THE SYSTEM DEVELOPMENT PROCESS

Each of these tasks will evolve through a system development cycle which will be refined by the statewide committee responsible for coordinating the automation activities, the Wisconsin Statewide Automation Coordinating Committee (WSACC). In general, the system development cycle will consist of a series of steps or subtasks.

1. The first step is a general definition of the task: this definition includes a description of what is to be accomplished by the task (such as: Generate and Distribute the COM Statewide Catalog), who will be assigned to the task team, when the task is scheduled for completion, and a rough estimate of the staff time involved. The first few estimates will be quite a bit lower than actual time spent on the tasks; with experience, the accuracy of these estimates will improve.

2. The next step is a detailed definition of the task. The ad hoc task team must now be assembled; staff from the various libraries and systems are assigned and the planning meetings begin. The team must now define in detail all of the subtasks which must be accomplished in order to complete the task. As an example, for the above task, the detailed definition of the subtasks would include:

   a) Determine number of machine readable records available

   b) Determine sources and formats of available records

   c) Determine conversion and upgrade requirements

   d) Secure funding for COM vendor and COM readers

   e) Assemble information and generate RFP

   f) Submit RFP to vendors

   g) Evaluate proposals

   h) Select vendor

   i) Conduct benchmark tests from OCLC, CLSI, and other records

   j) Evaluate and select final COM output format

   k) Determine number of copies of the COM catalog required and price per copy

   l) Submit all OCLC, CLSI, and other tapes to the vendor

   m) Vendor produce the COM master and multiple copies

   n) Distribute the statewide COM catalog

3. The next step should be a review and approval of the detailed document defining the task. In the example above, approval means to proceed with the task.

4. Each of the subtasks would be conducted in turn. In this example, the next major review points would likely be review and approval of the RFP (subtask "e" above), review and approval of the vendor selection (subtask "h"), and review and approval of

the price per copy of the COM catalog (subtask "k"). The coordinating committee would also be required to determine the funding and staff priority of this project relative to the priority of the other projects.

11.2 A NOTE ABOUT SCHEDULES

The schedules in this chapter are approximate. The completion of many of the tasks will require a considerable amount of coordination, definition, and actual implementation activities. The more organizations and individuals involved on a task team the longer it may tend to take to define the tasks. Projects tend to take longer than expected and there are always surprises. A major part of each task is the task definition; one of the most critical events which must occur during the task definition is the assimilation of experiences and values of each of the team members by the other team members. This normal process takes time and helps assure an adequate and acceptable solution.

The time each task will take is a function of the number of staff assigned (not enough, enough, or too many), the amount of time spent on the task, the relative priority placed on the task by the organizations and the individuals, and the support received from other organizations (requests to review a position paper, response from a vendor for details and costs, etc.)

The schedules presented in the remainder of Part IV (Chapters 12-15) are to some extent optimistic; they assume a willingness on the part of each organization to participate in certain tasks, a willingness to use local staff and financial resources to produce statewide systems which will allow Wisconsin libraries to begin to optimize globally rather than locally, and a willingness to modify local procedures in order to adopt statewide and national standards and practices. The schedules also assume that minimum effort will be spent in local political jurisdictional differences. Most important of all, the schedule assumes the organizations involved in the initial organizing, coordinating and planning will begin activities quickly and participate heavily; the main bottleneck in this five year plan is getting organized and getting started.

If funding and staff are available sooner than these schedules indicate, by all means begin the projects sooner.

Chapter 12

TASKS FOR 1980/81

12.1 AUTOMATION COORDINATING COMMITTEE

1. Form a Wisconsin Statewide Automation Coordinating Committee (WSACC) with representative membership from various types of libraries, systems, and agencies; the WSACC (or other more suitable name) will be a formal advisory committee responsible for reviewing and advising on statewide automation projects. The WSACC and its task forces, through individual Wisconsin libraries and the Department of Public Instruction/Division for Library Services (DPI/DLS), can provide information to the administrative boards, trustees, and others who establish policies for school, public, and academic libraries. Major responsibilities would include:

   a) Establishment of statewide priorities for automation projects, including circulation, retrospective conversion, statewide data base, ULS, etc.

   b) Definition, approval, and implementation of standards for statewide bibliographic control, resource sharing, data base, and COM catalogs.

   c) Approval of general and detailed task definitions, such as those described in Section 11.1.

   d) Approval of major subtask documents and subtask milestones.

   e) Preliminary assignment of task team coordinator and team members; final approval of staff availability must be obtained from each of the organizations involved in the task.

   f) Preliminary recommendations for allocation of funds for automation; final recommendations must be made by the LSCA Advisory Committee and final approval obtained from the Department of Public Instruction/Division for Library Services.

2. Establish a Statewide Data Base Project and Task Force; this project reports to the WSACC and will coordinate, define, and direct the activities necessary to establish the Wisconsin statewide data base; in addition to the task force members, the task team coordinator and most of the staff support should come from the Department of Public Instruction/Division for Library Services and technical support from WLC. Membership should include public, school, and special libraries, systems, UW, and the Department of Public Instruction/Division for Library Services. The task force should plan for the generation of a COM catalog as the first product from the statewide data base. A target of 1982/83 for the first release of the COM catalog, with a minimum of 1,000,000 titles, should be established. A target of 1980/81 (or early 1981/82) for selection of a COM vendor is a reasonable milestone for the task force.

3. Establish a Union List of Serials (ULS) Project and Task Force; this project will coordinate, define, and direct the establishment of a statewide ULS data base and COM catalog. The task team coordinator should be from the Department of Public Instruction/Division for Library Services, UW - Madison, or Milwaukee Public Library.

4. Establish a Bibliographic Standards Task Force for the Statewide Data Base; this task force could report to the WSACC or the Statewide Data Base Task Force and would be responsible for development of statewide standards for the data base. The task force should generate decisions regarding:

   a) AACR2

   b) Authority files; permission for the COM vendor to automatically change headings in the data base when LC revises the heading, etc.

   c) Best record replacement rules for duplicate records on data base

   d) Method of recording holdings data (call number, library code, copy, and location)

   e) Retrospective conversion standards and practices

   f) Recommendations for a priority list for retrospective conversion based on bibliographic considerations

5. Expand the charter of the ILL Standards Task Force; this task force should develop rules, procedures, and priorities for in-state and out-of-state ILL activities once the statewide data base is available on COM. This task force should generate a priority list for retrospective conversion based on present ILL patterns and collection uniqueness.

   a) The present routing procedure which requires academic libraries to submit ILL requests to WLC first should be seriously reviewed and modified in light of known locations available in OCLC at present, and from the statewide COM catalog when available. ILL will be a less expensive and faster service if the request is sent directly to a known holding library.

   b) The same procedure, applying directly to a known holding library, should also apply to public libraries.

12.2 DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES

1. Help form and publicize the WSACC; secure initial funding for the WSACC.

2. Begin the clearinghouse for circulation RFPs.

3. Hire one or two new staff and reassign some existing staff to become automation consultants; this staff should work with the systems and other libraries in their circulation contracts and installation efforts. This staff should also assist the other automation task forces.

4. Begin the steps necessary to secure funding for:

   a) Acquisition tapes from book jobbers for all Wisconsin libraries utilizing these book jobbers. Although some vendors retain a limited number of retrospective records, it is important to begin receiving the tapes immediately so that as much data as possible may be captured. These machine readable records are inexpensive (less than $0.15 per title ordered, with possible quantity discounts) and are in MARC format and compatible with future uses such as the creation of a statewide data base. These archival records are as important

and useful as OCLC records, especially for smaller libraries which do not have OCLC and which tend to purchase a high percentage of their books from a major book jobber offering this service. It is, in many cases, impossible to obtain these machine readable records if these records are not requested at the time the books are ordered.

b) CLSI to full bibliographic records; for 1980/81 attempt to find a test sample conversion from the UW - Oshkosh file.

5. Open an RLG/RLIN search only account and learn RLG/RLIN search capabilities; determine the strengths and weaknesses of the system (and files) and determine the potential market for such services among public libraries in Wisconsin.

6. The Department of Public Instruction/Division for Library Services should purchase 10-20 OCLC terminals to be used as floater terminals for use by libraries during their retrospective conversion projects.

7. Establish a Circulation Systems Standards Group. This group would establish formal or informal standards and procedures to assist in the selection, installation, file conversion, and operation of circulation systems in Wisconsin. The DPI/DLS consultants should provide staff support to this group. The sum of knowledge and experiences of the operators of current systems can be utilized to reduce the time, costs, and efforts of the libraries planning to install new systems. The group coordinator should be an operator of a existing system. The group should determine the most effective ways of serving their patrons in a multi-library and multi-type library environment. The group should review the differences between different vendor systems installed or being installed in Wisconsin and formulate procedures and standards which will minimize these differences. Wisconsin may soon have circulation systems from different vendors installed in different libraries; one of the tasks for this group is to determine the best method of interfacing these systems. The experiences in Illinois and Clark County, Nevada should be reviewed as examples of multi-library and multi-type library (academic and public) cooperation.

8. Obtain release from libraries to use machine readable library records in the statewide data base. Separate release forms must be signed by each library for each source of records: OCLC, book jobber, circulation system, etc.

12.3 UW SYSTEM

1. One UW library should open an RLG/RLIN search only account to train staff and access the RLG/RLIN files. Evaluate the benefits and costs for UW use of RLIN as a supplemental cataloging and ILL activity; evaluate the benefits and costs of extending the service to other academic and system libraries. It is expected that 10% - 20% of the current cataloging titles not found on the OCLC files (non-hits) can be obtained from the RLG/RLIN files.

2. One UW library should assist the Department of Public Instruction/Division for Library Services and possibly WLC to coordinate the statewide ULS task force; definition of goals, suggested membership, and approximate time table. Since UW - Madison has had extensive experience in producing a ULS, they should be considered the prime candidate for this task.

3. Determine the need for area or academic search service support; one UW library should conduct experimental searches for other academic or system libraries.

4. Continue plans for an OCLC retrospective project of the UW - Madison Memorial Library as well as libraries on other UW campuses.

5. UW System campuses should develop a set of requirements in the form of specifications to define a circulation system for their own campuses. UW - Madison has already prepared such specifications as part of the Madison/Chicago/IBM project. The UW campuses at Stout, Eau Claire, River Falls, and LaCrosse have jointly developed specifications and submitted a Request for Proposal to commercial vendors. If the other UW system libraries do not wish to wait for the results of the UW - Madison/University of Chicago/IBM project, they should each develop a Request for Proposal (RFP) for response by commercial vendors as well as locally developed systems, and obtain the necessary budget to install the system at the earliest possible time. UW campuses unable to acquire an automated circulation system in 1980/81 should begin the same process when they are ready.

12.4 PUBLIC LIBRARIES AND SYSTEMS

1. Submit circulation RFPs to Department of Public Instruction/Division for Library Services clearing house.

2. Systems and consortia should investigate the costs and benefits of obtaining a shared (network) circulation system for their respective areas. If such a circulation system can be supported, the system should proceed to obtain the initial funding, write the RFP (Request for Proposal), and carefully follow the outline for acquiring a commercial system as described in Chapter 6.

3. Continue to acquire and install circulation systems as planned. Work with Department of Public Instruction/Division for Library Services automation consultants in order to transfer the experiences to other libraries and systems.

4. Insure that the Library of Congress Card Number (LCCN) is included in all circulation records; this will be required for later matching and conversion of the record to full bibliographic records and inclusion in the statewide data base. All non-automated libraries should insure that LCCNs are included on shelf lists or similar records.

5. At least one library in each system should be a member of OCLC to provide cataloging services to other libraries in the system as an OCLC processing center, if this can be financially justified. It may also be possible for one system OCLC library to support ILL location services on behalf of other libraries in the system.

6. Libraries in the various systems should determine the need for system services such as an OCLC processing center, system-wide search services, a system catalog as an ILL finding tool, and a system circulation system.

7. OCLC libraries that do not perform all of their cataloging on OCLC, and non-OCLC libraries, should order acquisition tapes if their libraries have a book purchase contract with a vendor that supplies acquisition tapes.

8. Systems should also investigate the costs and benefits of obtaining a shared expanded on-line order system from a book jobber. To maximize the benefits the users of the shared system should agree to purchase most of their materials from that book jobber.

12.5 WILS/WLC

1. WLC should copy the Wisconsin records from the OCLC tapes and submit these records to the Department of Public Instruction/Division for Library Services for submission to a COM vendor.

2. WLC should copy Wisconsin archival records from the OCLC archive tapes as they are received from OCLC, and submit these records to the Department of Public Instruction/Division for Library Services.

3. Investigate the possible replication of WLN, as mentioned in Section 7.3.

12.6 SCHOOLS, SCHOOL DISTRICTS, AND CESAS

1. School libraries should begin to record the Library of Congress card number (LCCN) on all manual or automated cataloging records of new materials, if they are not already doing so. If resources permit, the libraries should record the LCCNs of older materials on the manual or automated catalog records.

2. When developing new automated systems, the appropriate bibliographic standards should be used, so that the records can also be utilized as input to the statewide data base.

3. Participate in the Council on Library and Network Development, WSACC, and the ILL task force. Present the needs of school libraries and school districts to these organizations.

4. Develop a statewide clearinghouse for documentation and microcomputer programs for educational use. If feasible, expand this statewide clearinghouse to include applications for internal library use (as described in Section 3.1.3.7) and make this information available to all types of libraries in Wisconsin.

12.7 ACADEMIC LIBRARIES

1. Academic libraries and vocational-technical libraries should participate in WSACC and the statewide data base, serials, and circulation working groups. These libraries have extensive machine readable files for books, serials, and A/V materials.

2. Determine the costs and benefits of a statewide academic COM catalog, including or separate from the UW System COM catalog. If cost-effective, begin the planning and fiscal process to obtain this catalog.

Chapter 13

TASKS FOR 1981/82

13.1 AUTOMATION COORDINATING COMMITTEE

1. The WSACC will continue to review and approve subtask milestones submitted by the various project task forces; this is an ongoing task for the full five year time frame and will not be repeated in this report.

2. The WSACC will continue to revise the automation priority lists.

3. The WSACC should establish an On-line Catalog Review Task Force. This task force will be responsible for defining the requirements of an on-line catalog and review of any vendor systems or potential systems. The task force should review and evaluate the on-line catalog experiences of other libraries in other states.

4. The WSACC or a separate task force should continue developing plans and priorities for retrospective conversion projects. A review of conversion alternatives for both OCLC and non-OCLC libraries should include hardware required, speed of conversion measured in titles per staff hour, unit cost of the various conversion methods and vendors, and an estimate of the cost of several typical conversion projects. Given the unit cost information, it should be possible to estimate the total project costs of each conversion project. These projects should then be broken down into multiple year projects at various libraries and funding sought for the top priority projects.

13.2 DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES

1. The Department of Public Instruction/Division for Library Services should secure incremental funding for the statewide data base, the COM catalog, the task team expenses, and the complete

conversion, upgrade, and merging of existing machine readable files. If the complete funding is not available in 1981/82, a priority must be established and as much conversion as possible be accomplished in 1981/82.

2. Based on the test tape conversions, the Department of Public Instruction/Division for Library Services should work with the COM vendor to generate some sample COM catalogs, perhaps for a system or an area multi-type library consortium, for study by the Statewide Data Base and ILL Task Forces.

3. Based on the results of the retrospective conversion alternatives and costs study described above, begin planning for the conversion of the non-machine readable portion of the Wisconsin Reference and Loan Library file.

4. Begin the study to determine the feasibility of dispersing selected portions of the Reference and Loan Library collection to libraries throughout the state.

5. If needed, 10-20 OCLC floater terminals, in addition to those purchased in 1980/81, should be purchased for retrospective conversion purposes.

13.3 UW SYSTEM

1. Begin heavy participation in an OCLC retrospective conversion project.

2. Evaluate proposals for circulation systems, select a vendor (commercial or locally developed), conduct the benchmark tests, install the systems, and conduct acceptance tests. Evaluate the UW - Madison/Chicago/IBM research project prior to proceding with vendor selection of a circulation system.

3. Evaluate the OCLC Acquisitions system and if it proves cost effective, begin operation of the system.

13.4 PUBLIC LIBRARIES AND SYSTEMS

1. If the 1980/81 studies have shown a need for system OCLC processing centers, they should be implemented in 1981/82; system cataloging should be available in late 1981/82 (or 1982/83).

2. The results and experiences of several months of operation of multi-library, multi-type library circulation systems should be documented, by the operators of the system and the Department of Public Instruction/Division for Library Services automation consultants, as a guide to other organizations contemplating a similar move. The results of the live full-load benchmark and acceptance tests should be made available to the Department of Public Instruction/Division for Library Services, and through the State Library to other libraries in Wisconsin and the country.

3. Begin planning for the interface of the new circulation systems from other vendors with the current CLSI system. Define the interface requirements and request a cost and schedule estimate from each vendor.

4. Review the need for system search service "experts" and, if required, select the search services and data bases, and begin the training.

5. Determine the need for a system COM catalog containing bibliographic and holdings data for all libraries in the system; the data for the COM catalog would be extracted from the statewide data base. Present this information to the statewide data base and ILL task forces.

6. Determine the need for a system ULS COM catalog; the process described above applies here also.

7. If the vendors of CLSI or any new circulation systems installed in Wisconsin libraries have implemented an acquisition service, one of the libraries with an existing circulation system should investigate the new system and report the findings to other libraries. The first step is to contact current users of the new service to determine the incremental hardware, software, and staff costs, the implementation and training experiences, and the users evaluation of the service. If the results of this survey are positive, the library should implement the system (without adding additional hardware, if possible) and operate on a test and evaluation basis. OCLC libraries should also evaluate the OCLC acquisitions system as a possible alternative.

13.5 SCHOOLS, SCHOOL DISTRICTS, AND CESAS

1. Review the procedures and costs necessary to perform retrospective conversion of selected libraries as a pilot test. If funding can be obtained, conduct the retrospective conversion project and document procedures, costs, and recommendations for future projects at other libraries.

2. Determine the costs and benefits of a school library subset of the statewide COM catalog. If a statewide school COM catalog is cost-effective, begin the planning and funding process.

3. Investigate the formation of OCLC processing centers at the school district/CESA level; also invesigate the alternative costs and benefits of joining some of the public library processing centers.

13.6 ACADEMIC LIBRARIES

1. For libraries planning the installation of an automated circulation system, investigate the costs and benefits of sharing the system with other libraries in the same geographic area. Multi-type circulation systems can be cost-effective when public and academic libraries share a system.

2. For OCLC libraries plans should be made to conduct retrospective conversion projects. In general, the costs for retrospective conversion will increase with time, as a function of increases in staff costs and eventual increases in OCLC prices.

3. If an academic COM catalog has been funded, produce the catalog in academic libraries and evaluate the benefits to the library staff and the patrons.

4. For OCLC libraries, investigate the use of the OCLC acquisitions subsystem.

Chapter 14

TASKS FOR 1982/83

14.1 AUTOMATION COORDINATING COMMITTEE

1. The retrospective conversion report should be reviewed; of the several options for retrospective conversion a few methods should be selected (e.g., OCR input by Selectric typewriter, home or micro-computer terminal with disks, OCLC, on-line standalone conversion on a circulation computer, etc.). Conversion projects should be assigned for 1982/83 startup. In some cases it may be less expensive to pay for a specific library to join OCLC and have the project pay for the terminals and the first few years of current cataloging costs in order to get low-cost retrospective conversion services for a library with a unique collection.

2. The WSACC should establish a Network and Technology Task Force; this task force would be responsible for reviewing the state of the art in terminal and communications technology as well as the national network activities. Areas to review include: home and micro-computer terminals, retrospective conversion technology, satellite communication for industry and the home, teletext (Viewdata/Prestel), facsimile transmission, national network line and message protocols, linking between utilities such as OCLC and RLG/RLIN or LC, linking of utilities and other search services such as OCLC with search services, circulation systems, and any other form of technology which may affect automation in libraries.

3. Review the state of the art of on-line catalogs. This is a study that should be repeated every two years, the next time in 1984/85. When a vendor's product becomes available, investigate the conversion, installation, hardware, facilities, and training costs. If funding is available, the funded library should produce an RFP, select a vendor system, conduct benchmark and installation tests, and install the system. The DPI/DLS automation consultants should participate closely in this process and assist in writing an evaluation report.

14.2 DEPARTMENT OF PUBLIC INSTRUCTION/DIVISION FOR LIBRARY SERVICES

1. The Department of Public Instruction/Division for Library Services should secure annual funding support for task teams, retrospective conversion, production of the COM catalog, the ULS catalog, and area/statewide search service coverage.

2. The first edition of the statewide COM catalog should be in 1982/83. (It may be possible to produce this as early as 1981/82.)

3. The vendor costs and prices to charge for system and individual library COM catalogs should be determined. If there is enough of a market for one or more system catalogs or individual library catalogs, order these COM catalogs from the vendor.

4. Coordinate with the vendor, and libraries beginning retrospective conversion for generation of circulation system files, to have the vendor generate circulation file records from the statewide data base.

5. Working with the Bibliographic Standards Task Force, determine the use of national authority files with statewide exceptions for the statewide COM catalog. If it is decided to implement a statewide authority system, have the vendor modify and update the statewide data base prior to the next release of the COM catalog.

6. Complete conversion of the Reference and Loan Library Catalog; after these records are added to the statewide data base and appear on the COM catalog, all ILL searching should occur on OCLC or the COM catalog. The cost of maintaining the manual catalog should be eliminated.

14.3 UW SYSTEM

1. Continue to operate the locally developed or commercial automated circulation systems installed in 1981/82. Develop plans for expansion of the circulation system to other UW - Madison libraries. Continue to acquire and install automated circulation systems at other UW campuses.

2. Continue and expand retrospective conversion projects.

14.4 PUBLIC LIBRARIES AND SYSTEMS

1. Continue selected retrospective conversion according to the statewide conversion priorities and funding availability.

2. Market the system COM catalogs. Determine the new ILL patterns due to system COM catalogs.

14.5 SCHOOLS, SCHOOL DISTRICTS, AND CESAS

1. Continue selected retrospective conversion, according to the statewide conversion priorities and the funding availability.

2. Investigate the possibility of cooperative purchase of circulation systems with public and academic libraries in the same geographical area.

14.6 ACADEMIC LIBRARIES

1. Continue selected retrospective conversion, according to the statewide conversion priorities and funding availability.

2. Begin to evaluate on-line catalogs; investigate the use of on-line catalogs in other academic institutions. If the costs, functions, and performance of installed systems appear satisfactory, begin the planning and fiscal process to implement on-line catalogs.

Chapter 15

TASKS FOR 1983/84 AND 1984/85

The tasks for 1983/84 and 1984/85 are primarily a continuation of tasks begun in previous years. The Wisconsin Statewide Automation Coordinating Committee will continue to review and approve subtask milestones, advise the Department of Public Instruction/Division for Library Services on priorities, and recommend new projects as required. There will be continual feedback from various projects; some of the findings and reports will suggest new activities to explore, new services to provide patrons, and a general lowering of the unit cost of some processes. Some projects will run into difficulties which will cause these projects to slip schedules into the 1983/84 and 1984/85 periods; this is expected, since the projects have not yet been fully defined and the funding is not secure.

The statewide data base is an on-going project; funding must be available to continue the addition of new titles and holdings to the data base and the production of a statewide (and perhaps some system or discipline) COM catalog. Over time, the statewide data base will be used to generate circulation records and on-line catalogs for individual libraries or groups of libraries.

> COST ESTIMATE: $200,000 per year (this may be partially or fully reimbursed by libraries paying for copies of the COM catalog)

A thorough review of the statewide ILL guidelines should be undertaken by the statewide ILL task force, based on the experiences after one year of ILL use with the statewide COM catalog. It is expected that ILL patterns will show a dramatic change once most libraries have a tool which provides positive ILL verification and location information.

15.1 THE EMERGING FUTURE OF AUTOMATION TECHNOLOGY

New vendors and new automation products will continually appear; existing products and services will change in character, functions, and costs. As new technology appears, vendors will absorb the relevant portions in their new products. As the national library network emerges during the 1980s, libraries will be able to take advantage of the new services, first through utilities, later from network brokers and commercial vendors, and finally through the libraries themselves.

In general, computers and file storage are becoming more powerful and less expensive every year. By 1985 it will be possible for a network broker (such as WLC) and perhaps an area consortium to own a computer more powerful than the present computers at the cataloging utilities (OCLC, RLG/RLIN, etc.). The technology and the costs will eventually permit a powerful and relatively inexpensive standalone computer in the library to perform acquisitions, cataloging, circulation, and patron and library staff searching functions, as well as word processing, message switching, electronic conferencing, and special report generation.

Some of this will occur before 1985; these early systems will be marketed and a few pioneering libraries will be using some of these services by 1985. By 1990 these systems will be the norm rather than the exception.

15.2 THE LIBRARY RESPONSIBILITY

It is possible for Wisconsin libraries to take advantage of this technology. The WSACC and task forces, through the individual Wisconsin libraries, can provide the information to the administrative boards, trustees, presidents, etc. It is up to the various libraries to justify the expenses of automation in order to achieve the results of better service to patrons and provide lower unit costs in some areas.

The United States is one of several industrial countries emerging into an information age. Computers and information systems will be a powerful and complex part of our society. During 1985-1990 there will be more powerful information services available in the home than are available today in any library; the use of teletext and home computers will bring personally selected portions of vast information files into the home electronically.

Libraries must be prepared to provide services in this environment or face continually reduced usage. Academic and school libraries have a responsibility to prepare the students for this environment as part of the academic resources of the institution. This same technology will also change the basic media and possibly the basic form of education; libraries are part of this process.

These products and services cost money; the libraries and their institutions will be facing serious economic decisions. It is to the benefit of the patrons and institutions to have the library staff, administrators, and governing boards knowledgeable and informed about the services, benefits, and costs of available technology.